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The Canadian
Medical Association Journal

Vol. VIII. JUNE, 1918 No. 6

PRESIDENTIAL ADDRESS

ONTARIO MEDICAL ASSOCIATION

MEDICINE AND DEMOCRACY

By John P. Morton, M.B., F.R.C.S. (Edin.), F.A.C.S.

Hamilton, Ont.

EXIGENCIES consequent upon combining five Medical Associations into one great congress and consideration for the scientific programme have led to the suggestion that the President's Address be distributed rather than read at the meeting. My purpose will be to discuss certain problems, actual and prospective, confronting our profession to-day, and, if possible, to suggest solutions therefor.

Permit me to express my deep gratitude to the Association for conferring the Presidency upon me, for I know there are many others more gifted and more deserving of this honour. I have been singularly fortunate in having the advice of men experienced in the work of the Association and a support from our local profession, highly unselfish and praiseworthy.

The thirty-eighth annual meeting is both unique and unprecedented. We have united all the large medical associations of Canada into one great Canadian Congress, to be held in Hamilton during this war year. The desire for this unity and conservation of energy by all the Associations was early noticeable, and following an invitation by the Ontario Medical Association, a conference of representatives from the Canadian Medical Association, Ontario Medical Association, Canadian Public Health Association, Ontario Health Association, and the Association for the Prevention of

Tuberculosis was held at the Academy of Medicine, Toronto, on October 25th, 1917. The spirit of coöperation between the participating associations was very evident and without difficulty, amicable arrangements were easily arrived at for the congress under the auspices of the executive of the Ontario Medical Association. The necessary conferences between such important bodies in anticipation of and in preparation for the meeting in May have been very helpful and augur well for the future organization of our profession, if any action, defensive or constructive, may be contemplated. My deepest concern is that this congress, which is a new departure, and for which I must consider myself partly responsible, will commend itself to the profession from the standpoint of its scientific programme and will engender the spirit of coöperation among the different associations. If these objects are attained, may I express the hope that this precedent may occasionally be followed.

The logic of holding this congress seems so apparent to some of us, that it is almost superfluous to answer some quite honest criticisms to which the proposal has been subjected. Some have said that no meeting at all should be held during such a strenuous war year, but I must conscientiously differ from this opinion for an essential part of war work is to meet and understand the vital questions at home, and our profession at this time, both from the standpoint of its own good and from that of the welfare of the public, is confronted with some strikingly important problems. The report of the Royal Commission on Medical Education has been tabled, and the future of regular medicine in Ontario requires the immediate attention of our Association in shaping and carrying through a resultant government measure. Further, it becomes necessary for us to decide how we can be of use from a purely lay point of view during war times, and this is quite apart from the splendid record of our profession in the work of the Canadian Army Medical Corps. Again, it becomes necessary to consider the pending problems involved in the gradually changing relations between the Medical Profession and the State, for these may result, in the not distant future, in the enactment of a Health Insurance Bill. These are sufficient reasons for the congress, but if any further justification were necessary, it might be found in the fact that we have committed ourselves to a scheme for the reorganization of our profession in Ontario on the basis of the county societies, and it is fundamental to the success of this plan, not only that a meeting be held, but that a large representa-

tion be induced to attend from rural districts. We have been told that separate association meetings would be more stimulating and would benefit the several sections in which they were convened, but surely the great need for conservation of time and energy is a satisfying answer to this criticism.

Permit me, with pride, in the early part of this address, to indicate the increasingly onerous part taken by the medical profession in the great world war. The Ontario profession has been greatly honoured and grandly represented by about twenty per cent. of its members who have joined the Canadian Army Medical Corps, and we are very proud of those who, at great personal sacrifice to themselves, have crossed the ocean to accept whatever appointment might fall to their lot, and in many cases to risk their lives for their country. Above all, will we enshrine in memory our heroes who have given their lives at the call of duty for the defence of country and liberty, and as Sir Berkley Moyinhan has so well said: "Let us write the epitaph they would most desire—'they have played the game'," than which there is no higher meed of praise. The awful necessities of this terrible struggle exhibit human nature at its best, and, unfortunately at its worst, for our Old World has never witnessed a sadder paradox than this, that the greatest scientific geniuses are seen planning human destruction and then passing on the wrecks they have made for reconstruction to geniuses just as great. Happily for our profession, this work of reconstruction largely falls to our lot, and our only desire is that it shall be well and faithfully performed.

If this meeting of the Ontario Medical Association typifies any special idea, it is reorganization. For long, the progressives among us have recognized that unity has been sorely needed between the many medical clubs, societies and associations of Ontario. Uniformity of purpose and desire have undoubtedly been in evidence, but an absolute lack of organization for the attainment of these objects has been still more in evidence. At the Toronto Association meeting not more than an odd hundred would register from the remainder of the province. When the weight of a united profession was required to exercise its justificable influence on the authorities concerned with framing a medical bill which would decide the standing of our profession for years to come and define the protection that the public might legally expect from exploitation by charlatans, those interested found the necessary initiative woefully absent and could discover no means whereby the medical

voice of the province, though unanimous, could assert itself. Our own Association which should have, and did finally move in this matter, represented only four or five hundred of the three thousand practitioners. In marked contrast to our criminal want of organization, the irregulars, in their presentation of evidence before the Commission, fought as one man and employed the most effective legal talent. Our negligence, where the medical welfare of the public is so vitally concerned, is unjustifiable and for years much medical charlatanism has been made possible, because years ago, when this question was originally dealt with by our Legislature, the same spirit of professional lethargy was abroad. These facts and many others have spelled lack of efficiency and have rendered absolutely necessary a radical change in organization. A carefully selected committee has drawn up a new constitution and by-laws; these were adopted by our Association at a representative meeting on October 25th last, and our gathering this year is notable as being the first held under the new regulations. We confidently expect, by these regulations, to be enabled, in a more comprehensive and effective manner, to serve the public and the State. In this departure our committee has wisely accepted the successful precedent of the Americal Medical Association. The guiding principle of the new constitution is to render the province a unit by adequate organization, and this is well accomplished by giving the county societies proportional representation on a Committee of General Purposes which will be the governing body of the Ontario Association. The ethical standards also rest with the local bodies, for only their members in good standing may join our Association. Democracy is thus applied to the organization of the medical profession, for the parent provincial association now really voices the medical opinion of the province, as our registration contains theoretically every doctor in the province. To render this representation vital and actual, each local society must be active and speak authoritatively for its own district. To bring about this desirable state I would suggest that we again follow the example of the American Medical Association and appoint councillors, who, in groups of possibly three, might be placed as advisors for and supervisors over the societies in certain territories, helping to arrange meetings and to make available good material for programmes. Moreover, they would assist in establishing societies in unorganized parts and would be required to report to the Association for their respective districts. To the extent that local societies are not representative and that localities are unorganized, or, if

organized, are inactive, to this extent does our Association under its new constitution, fall short of its ideal. I am speaking to the question for Ontario, yet it is devoutly to be desired that this plan for reconstruction be applied to the whole Dominion. Contemplate for a moment the splendid position of our Canadian profession realizable by the consummation of this scheme. Every district would have an active local society, and these bodies, through proportional representation, would control their respective provincial associations which they would unite to form. These provincial associations, in their turn, would unite to constitute and control the Canadian Medical Association. This complete system, already partly in operation, would reflect the democratic spirit of the times and would function defensively and constructively for the highest good of the profession and the public. We would secure much greater concentration of influence more unity and definiteness of purpose, better uniformity in our ethical and educational standards, a marked improvement in coöperation between our local societies and associations, and increased attendance at our meetings. Our Association is deeply indebted to those of our members who have not only dreamed of this new order of things, but have been instrumental in its realization.

The Royal Commission on Medical Education, after numerous sessions, at which every opportunity for giving evidence was afforded, has printed its findings, and, although we purpose to argue in committee many points which seem unsatisfactory, we have, on the whole, reason to be pleased with the report. The commission recommend that the care of the sick be in the hands of the medical profession, and that any one to whom the province gives this important privilege, must have at his disposal the available knowledge on all subjects pertaining thereto. Certainly the only manner in which we can effectively answer and counter the claims of the irregulars is to incorporate in our own teaching system all the therapeutic measures which have proven themselves beneficial. The report insists that we have been somewhat prejudiced and that physico-therapeutics must form a more prominent part of our teaching, and that an adequate staff and apparatus be provided for this purpose. Someone has said that "Convictions are more dangerous to truth than lies", and we have probably been too sure that our system has covered the whole field of treatment. The history of the wonderful changes in thereapeutics from Hippocrates to these times persuades us to keep our minds open for suggestions from whatever source. William Harvey's first publi-

cation, "Motions of Heart and Blood", was unable to pass medical censorship for twenty years after it was written. Renouard says that medical men of his day considered Harvey demented and that he lost most of his practice, in spite of the clearness and method with which he developed his ideas. Lord Lister's fight, extending over years, for the recognition of the principles of antisepsis, is still more impressive. Without contradiction one may say that prejudice, doubt, and active opposition have been the outstanding characteristics of the fate of really valuable new medical truths. Next to the antagonism of the Church, probably our own prejudices and conservatism have been the worst barriers to progress. The Royal Commission was right in this criticism, and it behooves us for our own welfare and the welfare of those in our charge, to keep minds open for the consideration of even apparently heterodox treatment. Our teaching bodies should be especially alert, and might include a progressive medical committee for the testing of even accidentally suggested therapeutical methods. Next winter a bill, based on this report of the Royal Commission, will come before the Legislature, and because our cause is just and we are in a position properly to present it, we are hopeful that the measure in its final form will do our profession full justice. Certainly it would be unworthy of us to gain control over the health of the community by organization, lobbying or other political device, unless we conscientiously strive to maintain the highest possible standard of efficiency.

I feel called upon in this address to introduce certain other considerations which seem to me of vital importance for the welfare of our profession and of the public whom we serve. "Service" is the best and most significant word in the English language today. Consideration for others is certainly the avowed ideal of sane modern democracy. The stupendous world conflict, in which at this moment great armies are advancing and recoiling, with the result wavering in the balance, will decide whether the German point of view is to stand or fall, that might is right and that the weak have only the privilege of servitude. The application of this saving principle of service to our profession raises the question whether in simply caring for the sick we are fulfilling our whole duty to the public. From my view point, our medical associations, societies, clubs, and round tables should not be for self-betterment alone but should actively engage in the great service of medically educating the laity. No government cares to enact laws without the support of public opinion, and it is equally desirable that we

should secure effective lay coöperation by education before seeking general support for the many great public health movements. Our health officers may enact all manner of legislation, but, until the public wittingly coöperates, these will largely fail to obtain the desired prevention. If then our organized profession is to live the larger life of service, it must use its organizations for public education. But my appeal is also to the individual physician to expand his sphere of usefulness by using his wonderful opportunities to inculcate the accepted principles of prevention and cure of disease. Few of us now act on the old-fashioned notion that the doctor should like the Asclepiadæ in the old mystical days of healing, surround himself with an atmosphere of mystery, which too often is but the cloak of ignorance. You will not interpret this to mean that the patient should be fully informed of his disease, but there is no reason why the physician should not be a medical missionary of education, and thus fulfil the modern democratic principle that we should think in terms of our neighbour. The greatest service then that our organized profession and the individual physician can render the public is to educate them medically to a reasonable extent. This would strengthen the hands of our public health officers, for enlightened public opinion in such problems as the venereal diseases and tuberculosis would help and force our legislators to keep pace with it; we ourselves would be stimulated to maintain higher standards both in teaching and in ethics, and further, the public generally would not so easily become the dupes of charlatans, who would then be rated at their true value.

Another consideration to which I would invite your attention may be put in the form of a question. Do we as a profession, in the great responsibility entrusted to us, adopt adequate means for safeguarding the public from incompetency among ourselves? Do our recent graduates possess the very highest possible standard of theoretical education and the practical knowledge necessary to treat and operate for disease? In too many cases, I fear, they acquire at the expense of their private patients, their practical knowledge, which should have been gained in some hospital. This might be prevented by greater teaching efficiency and by improving the facilities for clinical and practical instruction. Full time professors in at least medicine and surgery are essential. Again, after a man has been in practice for a number of years and makes no attempt to keep in touch with modern ideas, he becomes educationally mired and is a medical menace in his community. Un-

fortunately this type of doctor often learns ways of beguiling the public as fast as he unlearns his medicine. Can the public be protected from this danger? Some have suggested that we all undergo periodical examinations to be conducted by the whole-time men at the teaching centres. Even classification of practitioners, perhaps every seven years, has been mentioned as a help. A more practical expedient would be to require each one to undertake post-graduate work at specified times, and proper facilities for this would then be obligatory upon all university and hospital centres. Moreover, all teaching bodies might be able, through local societies, to provide courses of extension lectures.

This seems a suitable juncture to mention the very commendable propaganda on the part of the American College of Surgeons for standardization of hospitals on the basis of efficiency. Taking into consideration the various conditions under which hospitals operate, certain requirements would be laid down, and according to the degree to which these requirements are fulfilled, would the hospitals be classified. The factors named as imperatively essential are, the keeping of good case records and the utilization of these records as tests of efficiency; the maintenance of proper laboratory facilities; and the presence of a staff with good character. In the Bulletin issued in March of this year by the college, these three requirements of a minimum hospital standard are stated as follows:—

Case Records. That the hospital keep in a systematic manner case records of its patients together with a convenient summary of each case; and that it utilize these records in analyses of its medical and surgical efficiency.

Clinical Laboratories. That as implied in the foregoing requirements concerning case records, the hospital provide either directly or indirectly, the laboratory facilities, which in the science of medicine are essential in the diagnosis and treatment of patients admitted for care under normal conditions.

Division of Fees. That the hospital trustees or governing authorities in coöperation with the staff take action definitely to prohibit from all services of the hospital the practice of division of fees.

Although these considerations are accepted by the committee as a minimum for testing hospital efficiency, the various hospital staffs are requested to consider other features of the work, which, in their judgement should become part of the standardization programme. These are: The training of internes, the training of

nurses, obstetrics, pediatrics, cross infections, diatetics, anæsthesia, intelligible financial accounting, hospital administration, and pharmacy.

To safeguard the welfare of the public then, the highest standard of hospital efficiency is necessary, for the people now look upon this service no longer as a luxury but as an inherent right. The regents of the American College believe that a proper accounting in hospital work is inevitable, and that if the initiative is not taken by the profession, it will, as has been done in some case already, be taken by the public. The better to safeguard the public from inefficiency among ourselves, I would add the following requirement to the criteria of efficiency noted by the Regents, viz.: That all hospitals be properly equipped for post-graduate studies.

Among prospective problems may be placed the future relation of the medical profession to the State, which is claiming more and more attention in all countries. We are experiencing great democratic changes and are informed that still greater upheavals will occur after the war. Our profession may soon be required to formulate some plan where by the poorer and more medically neglected sections of the population will have the right and privilege to ask for free medical or surgical care. The cost of this so-called health insurance system would be divided between the patient, the firm, and the government. Hospitals and other properly equipped diagnostic centres would be established, where all necessary examinations for arriving at correct diagnosis would be carried out. The greatest gain of this plan would be the abolition of charity work, the very name of which has a stigma attached to it. Gladstone has said that we must do away with all charity, for we are sorry when we dole it out and we are sorry when we withhold it. Patients under this scheme would feel entitled to a physician, to a nurse and to the necessary medicaments. Of hardly less benefit would be the wonderful opportunities offered for scientific social work, for the presence of trained nurses in any of these homes would be a wonderful educational factor in cleanliness, and, let us hope, in godliness. Medical assistance would undoubtedly be called earlier with a consequent prevention of much disease and curtailment of many epidemics. There would be required some system of referees to assure efficiency and to prevent men lowering themselves to lodge practice methods by abuse of the system. The experience of all the other countries which have tried this plan of health insurance should enable us to evolve a very satisfactory act. Whatever the future may hold for us in this regard, thanks

to the reorganization of the profession, we are not likely to have a measure of this character enacted without thorough consideration by the medical men whom it most concerns. The medical profession can be proud of its record through many centuries, and it is to-day the only one which offers its services without cost to thousands in every city in the world. Now, although this is highly unselfish, and although we have been thoroughly conscientious in the performance of this work, it is justifiable to inquire, if, in the light of modern social service investigation, we are wise to continue this form of charity. Carried to the excess which is necessary in looking after the great dependent sections of our communities, it leads to a sense of superiority on the part of the donors and to a reprehensible pauperism of the recipients. Our social service scientists tell us that in so acting we are dealing with the evil from the wrong standpoint. Rather should we cooperate with the laity in initiating and furthering all movements which will tend to prevent disease. We are advised to be foremost in working for all child welfare organizations, for propaganda against venereal diseases and tuberculosis, for all public health work and other educative schemes. Our heartiest support should be tendered to all properly organized community centres and playgrounds, and in a word for all social service enterprises. These preventive organizations would make unnecessary a large part of our present charity work for the poor. If a good Health Insurance Act were in force, the poorer classes would be provided for medically without charity, and the self-sacrificing spirit, so proverbial of our profession, would be much more effectively exhibited in the ways above noted.

In bringing this address to a conclusion, permit me to express the same hope as did my immediate predecessor that before this Association again convenes, the awful world-convulsing war will be finished and that the principles of liberty and democracy will have triumphed. Just as in the individual, evil and good strive for the supremacy, so in the world as a whole, fearful conflicts seem necessary to assure that steady progress of ideas in which our faith for the future lies. In our private business and national life, heart-searching is required, for there is much of that very might-is-right spirit, typified by our foes, to defeat which we are pledging our property and our lives. It is gratifying to know that in the work of reconstruction which this war makes necessary, the medical profession must take a large and noble part, for whatever change there be in the spirit of the age, it cannot sound a more inspiring watchword than ours—SERVICE.

THE DETERMINATION OF BASAL METABOLISM BY THE "RESPIRATORY-VALVE AND SPIROMETER METHOD" OF INDIRECT CALORIMETRY, WITH AN OBSERVATION ON A CASE OF POLYCYTHEMIA WITH SPLENOMEGALY*

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(*Published under a grant from the Cooper Fund for Medical Research*)

I. Introductory

THE *Science of Calorimetry.* Probably no single departure in medical science has been so productive of significant results in the establishment of definite biological standards, and in the yielding of exact clinical data upon the metabolic life processes of the individual, as has that chapter of observations which began with the measurement of the respiratory exchange by Regnault and Rieset in 1850 and the computation of heat production by Pettenkofer and Voit in 1862, and the invention of the respiration calorimeter by Rubner in 1894, and which culminated, through the skill and genius of Atwater[1], Rosa[2], and Benedict[3], in the perfected respiration chamber calorimeter, as installed and operated to-day by trained corps of workers at the Russell Sage Institute of Pathology in New York, and the Nutrition Laboratory in Boston. Through the numerous studies made by trained workers upon these calorimeters and other forms of respiratory apparatus—foremost among which must be enumerated the elaborate series of determinations by Benedict[4], Carpenter[5], Lusk[6] and Collaborators, under the titles "Animal Calorimetry" in the *Journal of Biological Chemistry*, 1912–1915, and "Clinical Calorimetry" in the *Archives*

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*From the Clinical Laboratories of the Royal Victoria Hospital, Montreal.

of Internal Medicine for 1915–1917, and also in the various publications issued on this subject by the Carnegie Institution from 1907 to 1915—abridged computations have been tabulated, curves plotted and normal standards established, so that the complex calculations involved in this work, and the extensive preliminary data required for accuracy in it, are being rapidly reduced to their simplest terms. The same set of workers again, with whom must be included Boothby and Peabody, Eugène and Delafield Du Bois, Means, Higgins, Henderson and others, and, in a less technical but very vital sense, Joslin, Allen and Edsall, have, by determining the metabolism in various pathological states, established the clinical significance of altered heat values especially in those obscure conditions of disordered internal secretions and blood or tissue regeneration, the recognition of which was so well described by the late Dr. Theodore Janeway[7], in his brilliant Address before this Association, as one of the main functions of the modern consultant.

Finally, the various forms of apparatus in use to-day for the determination of respiratory exchange and heat production, from the complicated Atwater-Rosa calorimeter down to the simple Tissot spirometer and Douglas bag, have been subjected in all their details to an exhaustive comparative study by Dr. Carpenter[5], which has been published with full descriptions and diagrams by the Carnegie Institution of Washington. Thus, in very recent times, the science of calorimetry, that is, the calculation of the heat production of the individual, has been reduced from an abstract physical science to a practical subject within the grasp of the ordinary student of medicine, and, by an admirable coöperation of workers and resources, has been brought within the range of easy clinical application in any hospital of modern staff and equipment. These results of the combination of executive genius, unselfish scientific work, organized hospital and laboratory resources, and beneficent legislative support, which underlies the present status of the subject of respiratory metabolism in this country, is surely a triumph of which twentieth-century medicine may well be proud.

Definitions. *Basal Metabolism* is the term applied to the heat production of an individual in the fasting and resting state, and may be estimated in a given case by the calculation of the total calories produced per hour, and per square metre of his body surface area. It is usually expressed in terms of per centage of the basal metabolism of normal individuals of the same age and sex, quantities

which have been established through the series of determinations on normal subjects made at the Russell Sage Institute of Pathology, and elsewhere.

The determination of the heat production of an individual is known as the *Science of Calorimetry*. It may be carried out by two methods, termed respectively, direct and indirect. By *Direct Calorimetry* is meant the estimation of heat *elimination*, that is, the heat given off by radiation, conduction, and vaporization, as directly observed and estimated during the time the subject is confined in a closed air chamber, known as the respiration calorimeter. *Indirect Calorimetry* is the determination of the *heat production*, and may be expressed by the ratio of the carbon dioxide and oxygen given off during a given time in a known volume of air to each other, and to the height-weight curve or surface area. This indirect method may be carried out in one of two different ways, the so-called "closed circuit" and "open circuit" methods.

In the *closed circuit* method of indirect calorimetry the expired air is conducted from the patient directly through bottles containing soda-lime and sulphuric acid of known weight which deprive it of its carbon dioxide and water respectively, while the oxygen needed for absorption is introduced from a weighed container; the amount lost of carbon dioxide and water are determined by weighing the receivers before and after the experiment, and the oxygen introduced is computed by weighing in the same way. This is the method followed in the Benedict apparatus, and the Atwater-Rosa calorimeter at the Russell Sage Institute is supplied with a similar equipment, so that with it both direct and indirect methods of calorimetry are carried out on the same patient and are used to check each other in the routine investigations carried on.

In the *open circuit* method of indirect calorimetry the expiration of the subject is not analyzed in the apparatus, but he breathes in and out of tubes separated from each other by expiratory and inspiratory valves, from which latter the expired air is measured in a tank meter or bag for subsequent gas analysis. This method is that followed in the Zuntz-Geppert apparatus, the Tissot spirometer, the "respiratory-valve and spirometer" method described and figured here, and the Douglas bag.

II. The "Respiratory-Valve and Spirometer" Method of Indirect Calorimetry

As stated, this is an open circuit method, similar in principle and apparatus to that of the Tissot spirometer, which is described and figured in the monograph by Carpenter[5] (p. 64). In it the patient is connected by tubes provided with expiratory and inspiratory valves with a spirometer tank in which a known volume of his expired air is collected during the experiment, from which samples are withdrawn and analyzed on the Haldane gas analysis apparatus for their percentage content of oxygen and carbon dioxide, the ratio of these gases to each other and to the volume of expired air breathed into the tank during a given time at a standard temperature and pressure, furnishing the data for computing the patient's heat production.

While not intended to replace the calorimeter chamber, which, as a means of direct computation and for the final checking of standards cannot be dispensed with, this method has a very wide range of usefulness. The apparatus is simple and relatively inexpensive, and the method is one of easy application to the patient, and requires a much shorter time of attachment than the stay demanded in the respiration calorimeter, while the results obtained in the hands of reliable technicians are found to be practically identical with those by direct calorimetry. In his comparative study of the methods of investigating respiratory exchange, Dr. Carpenter gives the Tissot prominence as being both reliable, and valuable from its simplicity and easy application. His recommendation of it is emphasized by Yandell Henderson[8] in a recent communication.

The respiratory-valve and spirometer method (of which the Tissot is the best-known example, and of which it may be taken as the type) was that followed by Dr. Walter M. Boothby at the Respiration Laboratory of the Peter Bent Brigham Hospital, and is that now conducted in his laboratories at the Mayo clinic. During the winter of 1915–1916 it was the privilege of the writer to spend a month at the Brigham Hospital Laboratory under the kind tutelage of Dr. Boothby and his able assistant and associate, Miss Irene Sandiford, with the result that the following summer a spirometer was installed at the Royal Victoria Hospital, Montreal, and the work initiated here under their personal instruction, and through the support of a grant from the James Cooper Fund for Medical Research. A full description of the technique of the

"respiratory-valve and spirometer" method as carried on by Dr. Boothby and others in this country, and of the modifications introduced at his suggestion on the spirometer figured here, should be of interest, and is one of the objects of this communication. In this connexion, I would especially acknowledge to him and Miss Sandiford the abridged calculation sheet which is published later in this communication.

Description of Apparatus. The original Tissot spirometer[9], (designed in France) differs somewhat in construction from the modification figured in this article, and is supplied with an automatic water siphon counterpoise, and special (Thiry) valves and glass nose pieces. The principle is, however, identical, the changes introduced being simply those indicated by convenience, economy, or greater simplicity. The construction of the apparatus in use here will be readily understood from an examination of the diagram of it (Fig. 1) kindly made for me by Dr. Louis Gross. In it the spirometer bell or tank, which is here of a capacity of about 200 litres, is made of aluminum (in this spirometer), or of copper, preferably the latter, and must of course be absolutely air-tight. It is inverted upon and received into an ordinary galvanized iron ash barrel (A), which is filled to within about eight inches of its brim with water, upon which the spirometer floats, and into which it sinks by its own weight when deprived of counterpoise. The spirometer is attached to a lead counterpoise (G), which holds it in equilibrium, by a steel measuring tape (B), graduated to 200 cm., which passes over a steel balance wheel (D), so placed that its outer circumference stands directly over the centre of the spirometer, over the surface of which the tape must run smoothly with a minimum of friction. Air is admitted into, and discharged from the barrel through two one-inch iron pipes which pass vertically downwards on either side along the outer wall of the receiver (A) to near its bottom where they are bent inwards piercing its sides, and passing along its floor to near its middle are turned sharply at right angles to pass vertically upwards to a point about two inches above the level of the water which it contains, thus communicating with the cavity of the spirometer. The external openings of these pipes are supplied with ordinary three-way gas-plumbing stop-cocks, the surfaces of which are well ground and greased so that they turn readily and can be opened and closed with a key instantaneously, at the beginning and end of an experiment, and which are provided with stops preventing them from turning beyond the three direc-

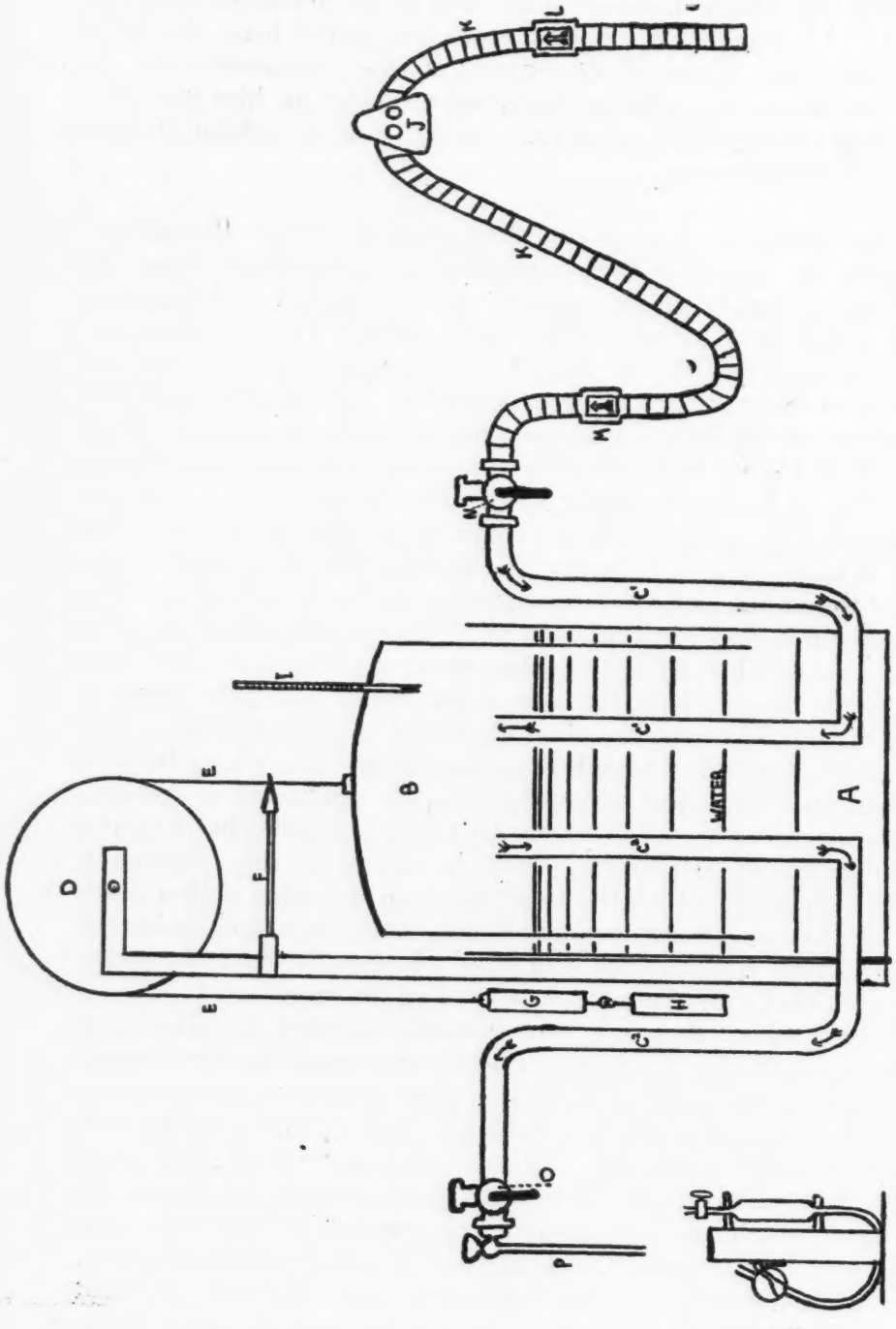

FIG. 1.—VERTICAL SECTION THROUGH RESPIRATORY VALVE AND SPIROMETER APPARATUS (MODIFICATION OF DR. WALTER M. BOOTHBY)

Fig. 1—Key to lettering of illustration showing Vertical Section through Respiratory Valve and Spirometer Apparatus

A. Galvanized iron vat, three-fourths filled with water, on which the bell of the spirometer floats, and which acts as a seal.

B. Bell of the spirometer tank made of copper or aluminum in which the expired air is collected for measurement and analysis.

C^1 C^2 Iron pipes passing from without up through the floor of tank to a point above the level of the water, and permitting the passage of air in[1] and out[2] of the spirometer.

D. Balance wheel for suspension of spirometer bell by

E. Steel tape graduated in centimeters for measurement of volume of expired air collected (i.e. height to which spirometer ascends).

F. Indicator needle for reading height of spirometer before and after experiment.

G. Lead counterpoise, so adjusted as to maintain tank in equilibrium at about two-thirds of its height.

H. Additional weight added during experiment to allow tank to rise gently with each expiration (by negative pressure).

I. Thermometer for ascertaining temperature of expired air at close of experiment.

J. Mask applied to patient's face during experiment. The two holes admit the entrance and permit the exit, respectively, of the inspired and expired air.

K. Corrugated flexible rubber tubing passing from either side of the mask and connecting it with

L. An inspiratory valve, communicating with the outer air and

M. An expiratory valve, attached to the flexible tubing, and to iron pipe leading into spirometer through

N. Three-way valve which connects the inlet pipe C^2 of spirometer (a) with the patient, or (b) with the outside air, or which (c) closes the spirometer to both.

O. Three-way valve which connects the outlet pipe C^2 of the spirometer (a) with the outer air (as in emptying the spirometer), (b) with gas sampling tubes for withdrawal of samples, or (c) closes spirometer to both.

P. Gas-sampling tap. A small stopcock with rubber tubing attached, inserted into one outlet of the three-way tap N.

Q. Burette with gas-sampling tubes into which samples of expired air are withdrawn through the stopcock P. at close of experiment for subsequent analysis.

tions desired. The valve (N), at the entrance pipe connects it with the flexible tubing carrying the expired air from the subject into the spirometer, and may be opened (*a*) to the patient and the spirometer, (*b*) to the spirometer and outer air, but closed to the patient, and (*c*) may be closed to the spirometer. The valve (O), at the exit pipe is blocked in one of its openings by a small stop-cock (P), through which air may be withdrawn from the spirometer at the close of the experiment to the gas sampling tubes. The exit valve may thus be (*a*) open to this gas sampling tap and the spirometer, (*b*) open to the spirometer and the outer air, or (*c*) closed to the spirometer.

The apparatus for the transmission of the expired air from the patient to the spirometer used here (see Fig. 2) is a mask obtained from the H. N. Elmer Co., 1140 Monadnock Block, Chicago (agents for the Siebe, Gorman Co.), and figured at page sixteen of their catalogue. To it are attached rings for the attachment of tapes to tie it over the patient's nose and mouth. The flexible corrugated rubber tubing (K) passing from the mask to spirometer may also be obtained from the same source. It may be replaced by ordinary hose tubing if desired (as in this spirometer) except near the mask, and at the bend for the expiratory valve, where the flexible tubing should be used. The inspiratory and expiratory valves used in the course of the tubing from the patient are in this apparatus the ordinary Douglas' valve, in which a back current of air is prevented by a mica flap. They do not respond so readily to changes in the direction of air as the Tissot valves and so have not so high a percentage of efficiency (Carpenter), but give sufficiently constant results for use. *During the experiment they must be fixed in the vertical position, with the mica flap horizontal.* The inspiratory valve should not be placed at the end of the intake tube, but separated from the outer air by a short length.

The counterpoise (G) used in this apparatus is an ordinary piece of lead tubing closed below and filled with shot to such a weight that when it is in position, with the spirometer valves open, the tank will stand at equilibrium at about half of its height. On its bottom is a hook for the attachment of the additional weight (H) which must be such as to allow the tank to rise gently with each expiration.

The subject of the counterpoise to be used, and of the additional weight to be added during the experiment is of interest. In the original Tissot, and in several laboratories in this country, a constant equilibrium of the tank at all points of its height is

maintained by means of a water siphon balance, but it has been shown by Dr. Carpenter[5] (p. 217) that such an automatic arrangement is unnecessary, and that trifling changes in the counterpoise do not signify.*†

The additional weight to be added during the experiment varies slightly with different apparatuses. It must be sufficient to allow the tank to rise gently with each expiration but not enough to send it up without this. In this spirometer it is 200–250 gms.

Description of technique. The preliminary essential for basal metabolism is that the patient must be in the *fasting* and the *resting* state. The experiment is therefore preferably conducted in the early morning, and directions are given in the ward that no nourishment is to be taken after six o'clock the previous night except a cup of *Kaffee-hag* or tea at 7.00 a.m. if desired. A new patient should be visited in the ward the previous day by the operator and the procedure explained and all anxiety removed. At 8.00 a.m. he is sent to the laboratory in a bed with three pillows, accompanied by a nurse who remains with him throughout the experiment, and is trained to make certain necessary observations. From the moment he enters the laboratory absolute quiet is essential, the door being closed and no conversation above a low tone permitted (for the psychological as well as actual effect).

The observation is divided into the preliminary period and the experiment proper, which is run in two periods of eight to fifteen minutes according to the character of the case. In the *preliminary period* the patient must lie at complete rest in a comfortable position without speaking, during which time his temperature and full minute pulse and respiration are taken and charted by the nurse, as also his blood pressure and a pneumograph tracing if desired, the operator meantime emptying the spirometer of air and placing

* The writer made several observations upon various weights of counterpoise before seeing Dr. Carpenter's article with confirmatory results.

† As a result of an enquiry made of Dr. Carpenter through Dr. Paul Roth upon the subject of the adjustment of the weight of the counterpoise, I received the following reply:

"Dr. Carpenter tells me that he balances the spirometer as perfectly as possible with the bell half-way up (or down). To check it up he adds *for instance* 40 grammes on the bell to cause it to sink slowly and down to the bottom. He returns the bell to the *half-way* position and puts the 40 grammes on the counter weight this time. If perfectly balanced the *smallest weight* which will cause the bell to sink to the bottom *from the half-way position* will also, when transferred to the counter weight, cause the bell to rise just to the top. If, for instance, the weight will sink the bell but will not raise it proportionally when transferred to the counter weight, it indicates that this counter weight is yet too small."

all in readiness for the experiment. Towards the close of the preliminary period the mask is applied to the patient's face and tied firmly in place by the tapes attached, two additional tapes being added around the head and over the mask to keep it tightly adjusted without the slightest leak (which may be tested for by applying soap bubbles). Care must be taken that the patient is perfectly comfortable and that his respiration is quite unimpeded, the slightest obstruction leading to erroneous rises in the metabolism figures. The tank is then "washed" several times with the patient's air by admitting and discharging a small quantity through the entry and exit valves. After the last washing a cushion of the patient's air is left in the spirometer and both valves are closed, the counterpoise is attached, and height of spirometer read.

To begin the first period of the experiment, the operator adds the additional weight to the counterpoise and immediately connects the patient with the spirometer by suddenly opening the entry valve, preferably at the end of an expiration, and at the same moment starting the stop-watch. The spirometer should rise very slightly with each expiration and should be allowed to ascend to about two-thirds or three-fourths of its height as desired. Meantime the operator records the time of starting, and the nurse records the full minute pulse, and half minute respiration every two minutes, and notes any changes in the patient's condition or breathing on a chart which becomes part of the record. The period is closed by simultaneously closing the entry valve and stopping the stop-watch, removing the additional weight, and taking readings of the height to which the spirometer has ascended, the temperature of thermometer, the duration of period by stop-watch and the barometric pressure, and recording these data on the calculation sheet. The difference in the height of the spirometer at the start and finish is the rise of the spirometer due to the air expired in the time shown by the stop-watch. The patient is now released from the mask and samples are taken. This is done by first allowing a portion of the air in the spirometer to escape through the exit valve (the counterpoise being removed, so that the tank will sink by its own weight), in order that the central part of the contained air may be obtained for the samples, and then drawing off duplicate samples through the small gas sampling tap (which must be first "rinsed" with the patient's air for some minutes). The barometer is read and recorded at the close of each period. After the end of the second period the patient is returned to the ward, where his absolute weight and height are taken and checked by a second observer (as

Fig. 2 —"Respiratory-Valve and Spirometer" Apparatus for Determination of Basal Metabolism as in use at the Royal Victoria Hospital, Montreal.—(Technique of Dr. Walter M. Boothby, applied by M. E. Abbott).

The picture is taken as in the middle of a period, except that the additional weight has been removed from the counterpoise. The mask is seen attached to the face of the patient, with the nurse seated as during the experiment, and the spirometer has risen to half its height. The flexible corrugated rubber tubing attached to the mask, and the entry and exit valves of the spirometer, are obvious details of interest. Photograph by Mr. H. H Wootton, of the Royal Victoria Hospital.)

are all readings) and recorded. The samples obtained are analyzed in duplicate by the Haldane apparatus for the CO_2 and O_2 percentage, all figures used being retained on the sheets.

The Calculations. As may be gathered from the above description of the technique, the following data have been obtained from the experiment for the calculation of heat values and basal metabolism: (*a*) The volume of air in the spirometer; (*b*) the time in which this volume was expired; (*c*) the temperature of the expired air in the spirometer; (*d*) the barometric pressure (which is required in order that all calculations may be reduced to standard pressure for comparison with each other); (*e*) the percentage of oxygen absorbed, and carbon dioxide exhaled; (*f*) the height and weight of the patient; (*g*) the age and sex of the patient, whereby he may be compared with the normal.

From these data it is required to calculate (*a*) the volume per minute; (*b*) the CO_2 per kilogramme per minute; (*c*) the oxygen per kilogramme per minute (*d*) the ratio of carbon dioxide exhaled to oxygen absorbed, *i.e.*, the respiratory quotient; (*e*) the calories per square metre per hour (*i.e.*, the basal metabolism); (*f*) the basal metabolism in terms of percentage of the normal standard for the sex and age of the patient.

ROYAL VICTORIA HOSPITAL

CALCULATION SHEET FOR RESPIRATORY METABOLISM*

Case No...24405	Temp.....98° F.	Date, Dec. 13th, 1916.	
Name.....Thos. Dougall.	Height.....163·1 cm.		
Age.....58	Weight.....43·73 kg.	Period.....II.	
Diagnosis..Polycythemia and Splenomegaly.	Surface Area.1·42 sq. m.		

Barometer.....	750·3 mm.	(*a*) Log Fact. spir.....	·1652
Temp. Spir.....	14·5° C.	" Spir. diff.....	·5775
		" Fact. S.T.P.D....	·9629
Spir. Start.....	55·65 cm.	"	
End.....	17·85 cm.	" Total vent.....	·7056
		" Time.....	·9122
Diff.....	37·80 cm.	" Vent. per min....	·7934=62·1.

* This sheet is a copy of the printed form for calculations on respiratory exchange constructed by Dr. Boothby and Miss Sandiford for use in the laboratory of the Peter Bent Brigham Hospital and Mayo Clinic, and by their kind permission introduced at this hospital also.—(M. E. A.)

Time Start..... 9.40 a.m.
Duration.....8m.10s.=8.17 min.

(*b*)

CO_2 Expired..... 3·14%
" Inspired..... 0·03%

" Produced..... 3·11%

Log CO_2 produced.. ·4928
" Vol. per min... ·7934

" CO_2 per min... ·2862=193 cc.
" Weight..... ·6405

" CO_2 per kg. min. ·6457=4·42 cc.
" O_2 per kg. min.. ·6982

(*d*)

Log Resp. Quot..... ·9475=.89

Normal Comp..... 35·2 Cal.

Metabolism.....+28·7 %

(*c*)

O_2 Inspired, corr..... 20·98%
" Expired..... 17·57%

" Absorbed..... 3·51%

Log O_2 absorbed..... ·5453
" Vol. per min..... ·7934

" O_2 per min..... ·3387=218 cc.
" Weight..... ·6405

" O_2 per kg. min.... ·6982=4·99 cc.

(*e*)

Log O_2 per min..... ·3385
" Cal. value O.. ... ·6913
" 60 min..... 7782

" Total. Cal. per hr. ·8080=64·5 Cal.
" Surface Area..... ·1523

" Cal. per sq. m. hr. ·6557=45·3 Cal.

Notes:—Samples from Period II. only analyzed.

Analyses.

Sample No. I.		Sample No. II.	
9·176		9.153	
9·175		9.154	
8.887		8·868	
8.886= ·289= 3·10%		8·868=1286=3·13%	
7278		7263	
7277—1·609=17·53%		7260=1·608=17·61%	
4609	2066	4564	2063
9628	9628	9614	9614
4921	2438	4950	2449

Avg. CO_2..... 3·14%
" O_2..... 17·57%

CO_2+O_2..... 20·71%

Readings by M. E. A.
Checked by H. M.
Analyses by M. E. A.
Calculations by M. E. A.
Checked by H. M.

These calculations are carried out by four-place logarithms[10] where multiplication or division is required. They are further simplified by a number of computations made in tabular form by various workers, and which can be obtained by those interested. In the last two items (*e* and *f*) the calories per square metre are calculated from the body surface-area which is read at a glance from a height-weight curve published by DuBois[11], and the basal metabolism in terms of percentage of the normal standard from tables of average standards for various sexes and ages published

by Gephardt and DuBois[12], and based on numerous observations made by many observers, notably Means[13]. The calculation sheet published on opposite page from one of the periods of the case of polycythemia with splenomegaly reported, will serve as an illustration of how the work is done. On it the calculations are lettered in groups, to correspond to the following key:

(*a*) Volume per min. (in litres) =

$$\frac{\text{log. factor of spirometer} + \text{log. contents of spirometer} + \text{log. correction of barometer and temperature}}{\text{log. time}}$$

$$= \frac{\cdot 1652 + \cdot 5775 + \cdot 9629}{\cdot 9122} = \text{log. of } 6\cdot 21 \text{ litres.}$$

(The factor of the spirometer is required to reduce the amount of expired air which has been measured in c.m. to litres, and is found by measuring its diameter at three points of its height, and multiplying the square of the average radius by π, and is constant in each spirometer for all experiments. The barometer is corrected to standard pressure and density, by tables at the Smithsonian Institute, and to the temperature of the spirometer by tables made by Miss Sandiford).

(*b*) CO_2 per kg. per min. =

$$\frac{(\text{log. \% } CO_2 \text{ produced}) + \text{log. volume per min.}}{\text{log. weight in kilos}}$$

$$= \frac{\cdot 4928 + \cdot 7934}{\cdot 6405} = \text{log. of } 4\cdot 42 \text{ c.c}$$

(*c*) O_2 per kg. per min. =

$$\frac{\text{log. \% } O_2 \text{ absorbed} + \text{log. volume per min.}}{\text{log. weight in kilos}}$$

$$= \frac{\text{log. } \cdot 5453 + \cdot 7934}{\cdot 6405} = \text{log. of } 4\cdot 99 \text{ cc.}$$

(The oxygen absorbed is obtained by deducting the O_2 expired from the O_2 inspired corrected. The correction for oxygen inspired is obtained from tables by Miss Sandiford based on Haldane's formula, p. 26, "Gas Analysis").

(*d*) Respiratory quotient =

$$\frac{\text{log. } CO_2 \text{ per kilo. per minute}}{\text{log. } O_2 \text{ per kilo. per minute}} = \text{log. of } \cdot 89.$$

(*e*) Calories per square metre per hour =

$$\frac{\text{log. } O_2 \text{ per min.} + \text{log. calorific value } O_2 + \text{log. } 60''}{\text{log. surface area}} = \text{log. of } 45{\cdot}3 \text{ calories.}$$

(The calorific value of O_2 for various respiratory quotients is obtained from tables by Williams, Riche and Lusk[14]. The surface area is calculated as above stated from the height-weight curve published by DuBois[11], based on the linear formula.)

(*f*) Basal metabolism in per cent. of normal =

$$\frac{\text{log. Calories per sq. m. per hr.} - \text{log. normal standard for age and sex of patient}}{\text{log. normal standard}} = \text{log. of } 28.7\%$$

(The normal standard is taken from the table by Gephardt and DuBois[12].)

III. Observations made on a Case of Polycythemia with Splenomegaly (Osler's or Vaquez's Disease)

So far as is known to the writer, no report has as yet been published upon the basal metabolism of this condition, so that the somewhat scanty observations recorded below are worthy of report, especially as in them, the basal metabolism was found to be raised to a degree that compares closely with the values noted by other workers in pernicious anæmia.

The patient was a man aged fifty-eight in the medical service of Dr. C. F. Martin, to whom I am indebted for the privilege of making and recording this observation. He was admitted to the Royal Victoria Hospital on August 9th, 1916, complaining of flushed appearance, pain in left side, drowsiness, and feeling of fulness in the head, and gave a history of having been "flushed in the face" for thirty years, gastric trouble and splenic enlargement ten years, gastric hæmorrhage six years ago, blood in stools recently. Syphilis denied, but gonorrhœa several times. He was a rather tall man of a very florid high colour, especially in the face and extremities, the scalp, face and hands being of a deep pink and the hands becoming purple when held down. The peripheral venules were distended and the mucous membranes of the mouth and conjunctivæ very red. The spleen was enormously enlarged, reaching to the umbilicus and was tender to pressure and the liver projected below the costal border. The blood count showed 8,400,000 erythrocytes, 21,200 leucocytes, hæmoglobin 110 per cent., moderate anisocytosis, no nucleated reds. The urine was of sp. gr. 1024, acid with a trace of albumen and a few hyaline and granular casts. The blood pressure was not raised, systolic 130, diastolic 80. Pulse, 72–80. Respiration 22-24. Temperature, 98° rose occasionally to 99·2–99·4. The metabolism other than respiratory was fully studied by Dr. E. H. Mason, and is reported upon by him elsewhere. He found the nitrogen values normal. Irradiation with *x*-ray was done repeatedly. Discharged improved.

The basal metabolism was determined on two occasions, at an interval of five months. The first observation was made on August 23rd, 1916. The experiment was run in two periods, the average of the results showing a heat product of 40·9 *calories per square metre of his body surface per hour*, that is *a rise above the normal standard*, for individuals of his sex and age, *of sixteen per cent.*

The second determination was made on December 13th, 1916, two days before his discharge from hospital. 45·3 *calories per square metre were produced giving a raised basal metabolism of* 28·7 *per cent.* Two periods were run, but samples were only obtained from one. The calculation sheet from this single period is published under the technique (p. 000).

The following summary chart will show the values of interest in both experiments in detail.

ROYAL VICTORIA HOSPITAL

RESPIRATION CHART

SUMMARY OF METABOLISM DETERMINATIONS

Name Thos Dougall Case No. 24405

Age 58 Diagnosis Polycythemia with Splenomegaly.

Normals: 3.13 3.72 0.84 35.2

DATE	WEIGHT	HEIGHT	TEMP.	PULSE	PERIOD NO.	TIME	CO2 PER MIN.	CO2 PER KILO PER MIN.	O2 PER MIN.	O2 PER KILO. PER MIN.	R Q	VENT. PER MIN. (S.T.P.D.)	HEAT IN CALORIES PER HOURS TOTAL	HEAT IN CALORIES PER HOURS PER SQ. M.	HEAT IN CALORIES PER HOURS % NOR.	
1916	KG.	CM.				A.M.	C. C.	C. C.	C. C.	IC. C.		L.	CALS.	CALS.	%	
Aug. 23	43.3	162.6	98.6°	69	1	9.02	156	3.60	203	4.69	0.77	7.46				Experiment I
				68	2	9.26	153	3.53	211	4.87	0.73	7.53				
				69			155	3.57	207	4.78	0.75	7.50	58.9	40.9	+16	- Average of Periods 1424
Dec. 23	43.7	163.1	98.0°	66	II	9.00	193	4.42	218	4.99	.89	6.21	64.5	45.3	+28.7	Experiment II 5 samples obtained from one period only

Remarks. As stated above, the moderately raised basal metabolism of this case of +16 and +27·8 per cent. is very similar to that reported by Means, Aub and DuBois[12], as well as earlier workers, in pernicious anæmia, in which disease a moderately heightened metabolism has been noted in a number of the graver cases. In leukæmia, again, as is well known, the heat production as recorded by many observers[16] is still higher (40–60 per cent.), as also the general metabolism, a fact usually ascribed to the greatly increased white cell regeneration which is proceeding, and which constitutes an embryonic type of tissue. The obscure conditions existing from the metabolic standpoint in pernicious anæmia, in which red cell regeneration is combined with imperfect oxygenation of the muscular tissues of the body as a whole, make the raised heat values in the present case of polycythemia of added interest. For whether the erythrocytosis that is present here be primary or secondary, increased cell regeneration exists.

The subject of true erythræmia or primary polycythemia with cyanosis, with or without splenomegaly, or hypertension, has been reviewed by Lucas[17] in 1912. In connexion with a thorough study of two new cases reported he has collected and tabulated one hundred and seventy-nine from the literature, of which one hundred and forty-nine are undoubtedly genuine. He shows that the disease is now clearly established as a definite and not very infrequent entity. His review of the collected cases throws some side-light on the extremely interesting question of the etiology and the primary or secondary origin of the erythræmia, without, however, leading to any conclusion, as to the causation which still remains in obscurity. Thus in several cases the presence of a caseating hyperplastic tuberculosis of the spleen suggests a compensatory overfunctioning of the bone marrow (primary polycythemia); in others the existence of prolonged stasis suggests a compensatory increase of red cells to carry out the need of oxygenation of the tissues (secondary polycythemia); and in many others, again, the frequent and persistent hemorrhages suggest a vicious circle in which minute quantities of whole blood taken into the circulation act as a stimulus to regenerative bone marrow changes which in turn induce a plethora that is relieved by venesection and hæmorrhage. The action of a toxin causing deoxygenation of the body tissues is another possibility that would lead to a compensatory (secondary) polycythemia. Probably, just as in the pernicious anæmias, we are dealing with a mixed group, from which many cases with a definite etiology can in time be separated from the primary ones.

Summary and Conclusions

1. Through the organization of trained workers and resources, and the researches issuing therefrom, calorimetry has been reduced from an abstract physical science to the province of the well equipped clinical laboratory, and has now an accepted place among the methods of practical application in any large hospital with up-to-date facilities.

2. The basal metabolism of an individual is his heat production in the fasting and resting state, and is here calculated from his linear surface area as derived from the height-weight curve of DuBois, and is expressed in terms of percentage of the normal standard for his age and sex.

3. Clinical calorimetry may be carried out by direct or indirect methods, of which the latter are on the whole simpler and more easily followed by workers with limited assistance and resources.

4. The respiratory-valve and spirometer method of indirect calorimetry, of which the Tissot is the sample and familiar example, gives results that approximate closely, in reliable hands, to those of the direct method, it is simple, and the apparatus easily cared for. The modification installed by us at the Royal Victoria Hospital, Montreal, with the assistance of Dr. Walter M. Boothby, is described in this article and the technique and calculations.

5. Two observations made at an interval of five months are recorded upon a case of polycythemia with splenomegaly. The metabolism was raised on the first occasion 16 per cent., on the second 28·7 per cent.

6. This moderate rise of metabolism compares in an interesting way with cases of pernicious anæmia studied by others in which a similar rise was noted, in view of the red cell regeneration that frequently exists in both diseases.

7. The etiology of Vaquez's disease remains obscure, but the large and carefully studied casuistic, presented by Lucas, supplies the causation in a number of individual cases.

In conclusion, it is my pleasant duty to express my sincere thanks to Dr. Walter M. Boothby and Miss Irene Sandiford for the thorough instruction given me by them in the Tissot method, and for their assistance in this work in many other ways; to Dr. C. F. Martin for access to the clinical material studied, and support

of the work; to Miss M. F. Hersey, lady superintendent of the hospital for the coöperation of the nursing staff; to Dr. Louis Gross for the very excellent diagram of the vertical section of the spirometer in use here which he has kindly drawn; and to Mr. E. L. Judah, of the McGill Museum, for much help in adjusting the mechanical part of the apparatus without which it would have been difficult to proceed. I am also deeply indebted to Dr. Thorne M. Carpenter, of the Nutrition Laboratory of Boston, Mass., for giving to both manuscript and proof the benefit of his final revision.

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PROTEIN MILK—ITS COMPOSITION, PREPARATION AND APPLICATION IN THE TREATMENT OF DIGESTIVE DISTURBANCES*

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MUCH has been written concerning protein milk (*Eiweiss Milch*) in pediatric literature, till now scarcely an institution dealing with children in America would be without its use, yet in spite of its widespread employment among pediatricians, it still remains almost unknown to the general practitioner. We will therefore offer no apologies for the presentation of such a well-worn subject but will endeavour to present it in a practical manner, with the hope that it may be more universally and intelligently employed to the benefit of the coming generation.

For many years, physicians working on the problem of artificial nourishment of infants, have endeavoured to ascertain the reason for the difference in tolerance for cow's and mother's milk. All the constituents of the milk have been blamed at various times for the bad results, and it is probably true that the misfeeding of any one element may cause trouble.

Chemically speaking, cow's milk and mother's milk are not unlike; to be sure the protein of cow's milk is higher and is coagulated in coarser curds in the stomach. The next most striking difference is in the salt content, or the whey. Mother's milk having 0·2 per cent. while cow's milk has 0·7 per cent.

Finkelstein, of Berlin, who initiated protein milk to the profession, tried a unique experiment. He fed a series of infants on cow's milk casein and mother's milk whey and found that the infants thrived as though they were taking mother's milk. In another series he fed cow's milk whey and mother's milk casein and found these babies were subject to the same troubles as though they had been fed plain milk and water mixtures. From these

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observations he concluded that most of the trouble in the artificial nourishment of infants lay in the whey, or more properly speaking, the whey concentration, with a secondary pathologic fermentation of carbohydrates and fat.

A few years ago it was the general idea that all of the acute gastro-intestinal upsets were due to infection of the gut tract, and whereas this is true in a small percentage of cases, it has been proven that most of these cases are primarily due to intestinal cell harm caused by whey concentration with an overstepping of food tolerance.

We do not now look as much as formerly for the kind of flora of the intestinal tract, but instead, we determine the variety of bacteria by the food that is given. This at first glance appears queer but it is nevertheless true. The frequent acid, green explosive stools, are the fermentative stools caused by the whey or carbohydrate concentration with the fermentative bacteria acting on the carbohydrates and fats. These saccharolytic bacteria produces irritative fatty acids with increased peristalsis and mucus. This type of stool wastes the sodium and potassium salts with a consequent demineralization and relative acidosis which adds to the toxæmia. There is also a large water loss depending on the type of child and previous feeding.

A child can be rated as a good or bad child, depending upon its water-binding power or its water stability. Thus a child which has been fed on a poorly balanced high carbohydrate mixture such as is present in all patent foods, may lose one third of its weight in two or three days, while another child having the same disturbance may lose slightly or not at all. Thus the child's water-binding power has a great deal to do with the prognosis and treatment. In the administration of protein milk with its large protein content by adding to it a sugar which is not easily fermented (dextri-maltose) we produce instead of pathologic fermentation a condition of putrefaction which changes the acidity of the intestinal contents to alkalinity, the peristalsis is decreased, the intestinal contents pass slowly through the large intestines with absorption of fluid and excretion of calcium and magnesium salts. These minerals unite with fatty acids to form the typical fat-soap-clay-coloured constipated stools characteristic of protein milk feeding, and it is at this point that dextri maltose should be added to the food. In these stools the potassium and sodium and water loss is stopped, but the calcium and magnesium retention is lowered; however, this does not mean a negative balance because of the increased salt ingestion as is evidenced from the following Table I.

TABLE I.—COMPARISON OF THE SALTS OF DIFFERENT MILKS (COURTNEY AND FALES, N.Y.)

	Total Ash Per cent.	CaO	MgO	P205	K20	Na20	Cl
Protein milk (12 analyses).....	0·648	0·201	0·021	0·222	0·109	0·032	0·061
Cow's milk (5 analyses).	0·743	0·176	0·020	0·206	0·189	0·050	0·111
Woman's milk (16 analyses of normal nature milk).....	0·206	0·047	0·008	0·034	0·057	0·014	0·035

Preparation of Protein Milk

Method—(32-ounce quart used in this formula).

A quart of certified raw milk is taken; two teaspoonsful of essence of pepsin are added. Warm mixture to 140° F. Keep at this temperature ten minutes. (Too great heat will cause the curd to become tough). Then let it stand at room temperature for half an hour. The curd is then separated from the whey and placed in a cheese-cloth bag and allowed to drip in the refrigerator or any cool place. This takes from two to four hours and in large amounts may be allowed to drip over night. The curd is then worked through a fine sieve (thirty-six wires to the inch) at the same time adding one pint of a low acid buttermilk, and one pint of water or water to one quart. To every quart of finished protein milk, add one grain saccharin.

The buttermilk used is made from fat-free milk.

When using, the feeding must just be warmed slightly, so as not to curdle the milk.

Precautions to be Observed in Making Protein Milk

1. (*a*) Fat content of protein milk may be reduced by churning some of it into butter. To prevent this, all ingredients, curd, buttermilk and water should be absolutely cold when being worked through the sieve. A warm temperature helps in the separation of cream into milk and butter.

(*b*) The masher should not be worked in rotary motion. Pressure should be used each time to get the curd through, with the minimum amount of churning of the milk.

2. (*a*) As the curd is being put through the sieve it must be kept dripping wet with the buttermilk and water. If pressed through fairly dry, it clots on the underside of the sieve. These clots of fine curd never become evenly distributed through the milk, except by again putting through the sieve.

(*b*) If more liquid is required to keep the curd wet, than the necessary proportion of buttermilk and water, some of the protein milk already sieved may be used again.

This seems a long difficult unnecessary procedure, and many modifications have been tried always with more or less failure, so we would strongly advise adhering rigidly to the directions set forth. The technique has only been adopted after four years careful experimentation with various procedures.

Analysis

We have in this mixture a high proteid food with a finely divided curd and a moderately high fat content. The whey is the whey of buttermilk or is the mixture diluted one half, in this manner making the total salt content slightly less than cow's milk. The milk sugar, which is the carbohydrate of milk, is very much reduced, making it possible to add the very much less fermentable mixture dextri-maltose as the carbohydrate. It is important to bear in mind that a low acid buttermilk or lactic acid milk be employed, preferably with an acidity not greater than thirty-six.

According to Courtney and Fales, the total salts of the ash are greatly in excess of those of mother's milk. The amount of calcium is nearly five times and the phosphorus nearly seven times as great. The soluble salts also are nearly twice as abundant in protein milk. To this large excess of insoluble salts, especially calcium, is no doubt to be ascribed the value of protein milk in producing formed stools. From Courtney and Fales' observations there is no basis for the statement that protein milk is low in salts and this is certainly confirmed by our own analyses. In fact, the total ash content is higher than is ordinarily fed to infants, even when protein milk is diluted, the amounts are much greater than nursing infants receive.

The following procedures were employed in the analyses of protein milk in our own laboratory.

The protein milk was analyzed for moisture, ash, protein, fat and sugar.

Moisture. The milk was evaporated on the water-bath until it appeared dry, then heated in an oven about 95° C. for one hour, dessicated, and weighed.

Ash. The dried residue after the moisture determination was ashed carefully with a free flame until the ash was white, dessicated, and weighed.

Protein. The total nitrogen was determined by the Kjeldahl method—heating with concentrated sulphuric acid to remove the organic matter and combine the nitrogen as ammonium sulphate, neutralizing and alkalinizing to liberate the ammonia, distilling the ammonia into standard acid, and titrating to find the amount of acid used by the ammonia. The total nitrogen multiplied by 6·25 gave the protein.

Fat. Fat was estimated by the method of Saxon, in which the fat was dissolved in alcohol and ether, this extract evaporated, the residue extracted with petroleum ether, which was filtered, the petroleum ether was evaporated leaving the fat. The fat was dried about 95° C. one hour at a time, dessicated and weighed to constant weight.

Sugar. The method of Hill was used for sugar.

The proteins of the milk were precipitated by a dialyzed ferric hydroxide solution, removed by filtering, and the lactose in the filtrate found by titration with Benedict's solution.

The results of the analyses may be seen in Table II.

TABLE II MADE FROM 4% WHOLE MILK

Sample Number	Date 1916	Moisture %	Ash %	Protein (N.X. 6.25)%	Sugar %	Fat %
76	June	93·80	0·51	2·94	1·69	1·80
	12	93·46	0·50	2·98	1·61	1·78
77	13	95·69	0·44	3·16	1·54	1·20
		95·39	0·48	3·09	1·54	1·15
78	14	93·55	0·57	3·08	1·73	1·45
		93·44	0·57	3·10	1·78	1·46
79	15	94·29	0·54	3·05	1·80	1·31
		94·07	0·54	3·13	1·78	1·30
80	16	93·55	0·60	3·16	1·57	1·49
		93·59	0·58	3·33	1·57	1·54
81	17	92·36	0·59	3·51	1·33	2·05
		92·89	0·60	3·44	1·35	2·06
82	18	93·96	0·63	3·47	1·65	1·96
		93·88	0·61	3·42	1·61	1·91
83	19	94·65	0·51	2·75	1·61	1·72
		94·73	0·48	2·69	1·57	1·71
84	20	.....	....	3·21	1·54	1·41
				3·01	1·50	1·26
85	21	.....	....	3·40	1·63	1·68
				3·35	1·65	1·59
	Ave.	93·96	0·55	3·16	1·60	1·59

The average composition thus being—Fat, 1·6 per cent; sugar, 1·6 per cent.; protein, 3·16 per cent.; ash, 0·55 per cent.; giving a caloric value of ten to the ounce. It would thus require half an ounce of dextri-maltose to twenty ounces of protein milk to raise the sugar content to 3·5 per cent.

Indications for the Employment of Protein Milk

In severe cases of diarrhœa which do not respond to the elimination of carbohydrate in the usual milk mixtures, protein milk is indicated, as in practically all cases of intoxication and infectious diarrhœa and many cases of dyspepsia in breast fed infants. We have also found it most useful in chronic intestinal indigestion in older children. Last, but not least, is its employment most essential in the preliminary corrective stage of atrophy or marasmus.

Technique of Administration

Children usually take this milk readily, the only difficulty being encountered when it is given to children over a year, when, in order to get them to take the mixture, it is essential to starve them; in exceptional instances it should be given with a stomach tube. The milk should not be heated too rapidly nor above 90° F, otherwise tough masses of casein are likely to form. A large hole in the nipple is necessary and the feeding should be interrupted and the bottle thoroughly shaken every one or two minutes in order to keep the casein from settling to the dependent part of the bottle while the fluid portion alone is being consumed.

Duration of Administration

The length of time that protein milk should be continued depends primarily on the digestive condition and secondarily on this factor plus the gain or loss in weight. If, at the end of two or three days on protein milk there is no improvement in the number or character of the stools, with even slight gain in weight, no addition is made to the diet until the stools assume the appearance characteristic of a pure protein milk diet. This will come about usually in four to eight days and the stools then are quite regular, one or two daily, very large, light yellow, of the consistency of putty, rather dry, without odor and are free from any unmixed particles or mucus. If, on the other hand, in the first few days there is loss of weight—and this is more frequently met with than

gain—on the first appearance of betterment in the digestive condition, additions to the protein milk are begun.

The corrective period naturally divides itself into four stages:

1. That in which the protein milk alone is given.
2. That in which the protein milk plus dextri-maltose or barley flour is given.
3. That in which the protein milk plus a small amount of plain milk is given.
4. That in which protein milk is largely replaced by plain milk dilutions.

The majority of the cases were kept on protein milk for a period varying from three to four weeks and in many instances, contrary to the usual opinion, we were able to keep the children on protein milk plus starch and dextri-maltose, sufficient for their caloric needs for a period of several months, in each instance accompanied by a substantial gain in weight and normal increase in vigour and tissue turgor with comparative freedom from digestive symptoms. There was usually experienced little difficulty in weaning to an appropriate milk mixture, and only in rare instances was it necessary to return to the previous protein milk feeding.

The usual duration of the first stage was from six to eight days —in exceptional instances it being impossible to add carbohydrates before the third week.

As soon as the digestive condition showed some improvement, the first step toward increasing the food value was made by the addition of malt sugar in the form of dextri-maltose. This should be added gradually to the day's food supply, beginning with one teaspoon and increasing to one and a half to two and a half ounces. Occasionally, when the carbohydrate tolerance was extremely low, cooked barley flour was added gradually up to one or one and a half ounces, as this appeared to exert a less laxative action. The caloric value of both these food elements being respectively one hundred and twenty and one hundred calories to the ounce, it thus being possible to soon fill the infants' needs by these additions.

The average duration of the second part of the corrective stage varies from two to four weeks and in many instances for as long as eight months. Those that were kept on protein milk plus carbohydrate for any considerable period showed a consistent increase in weight. It was found that the addition of milk and water mixtures could be made either gradually or suddenly, and rarely was it necessary to return to the original protein milk feeding. In many cases protein milk was used in conjunction with breast milk feeding.

Calories and Weights

While in the corrective stage on protein milk alone, the calories naturally were low and pronounced gain in weight was not expected. Such was the apparent influence of the protein milk on the assimilation of the other food added, however, that gain was noted in many cases where none was looked for. It is not to be expected that young children will gain in weight when taking less than thirty-five calories per pound of body weight, yet as is seen from the case reports, many of our infants did.

Case Reports

Infants one to three months, twenty cases, average weight eight pounds, two nursed, thirteen fed on milk mixtures, and six on proprietary foods, seventeen diarrhœa, two decomposition and one for feeding. Ten were acutely ill on admission and three moribund, while only seven were not acutely ill. Six died, three were improved and left the hospital, while eleven were discharged cured. The babies were started on a diet of protein milk averaging twenty calories per pound, and in the diarrhœa cases, sugar was added in five days as barley flour or dextri-maltose 1·8 per cent. In decomposition cases, sugar was added earlier and as high as 3 per cent. During their stay in the hospital, the infants lost on an average of nine ounces but afterwards gained ten ounces, and were in the ward an average of twenty-one days.

Three to six months, twenty-five cases, average weight nine pounds; thirteen fed on milk mixtures and twelve on proprietary foods. Fourteen had fermentative diarrhœa, in two of which it had arisen as a complication of bronchitis and syphilis. Eight decomposition and three to have feeding adjusted. Two were moribund on admission, ten acutely ill and thirteen not acutely ill. Five died, the other twenty were discharged cured. These infants were started on an average of thirty-four calories per pound protein milk and the diarrhœa cases had recovered in an average of nine days, and sugar was added 1·4 per cent. The decomposition cases had sugar added in two days to 3 per cent. They lost an average of fifteen ounces and gained fourteen ounces before being discharged. They were in the hospital an average of twenty-seven days.

CHART NO. I

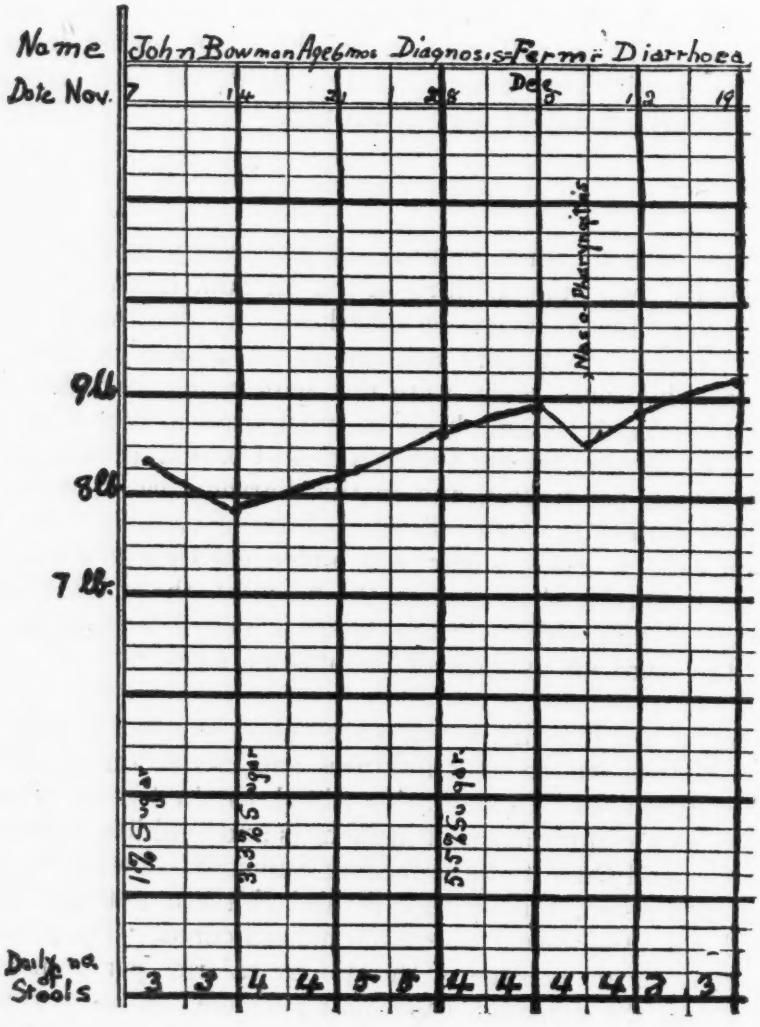
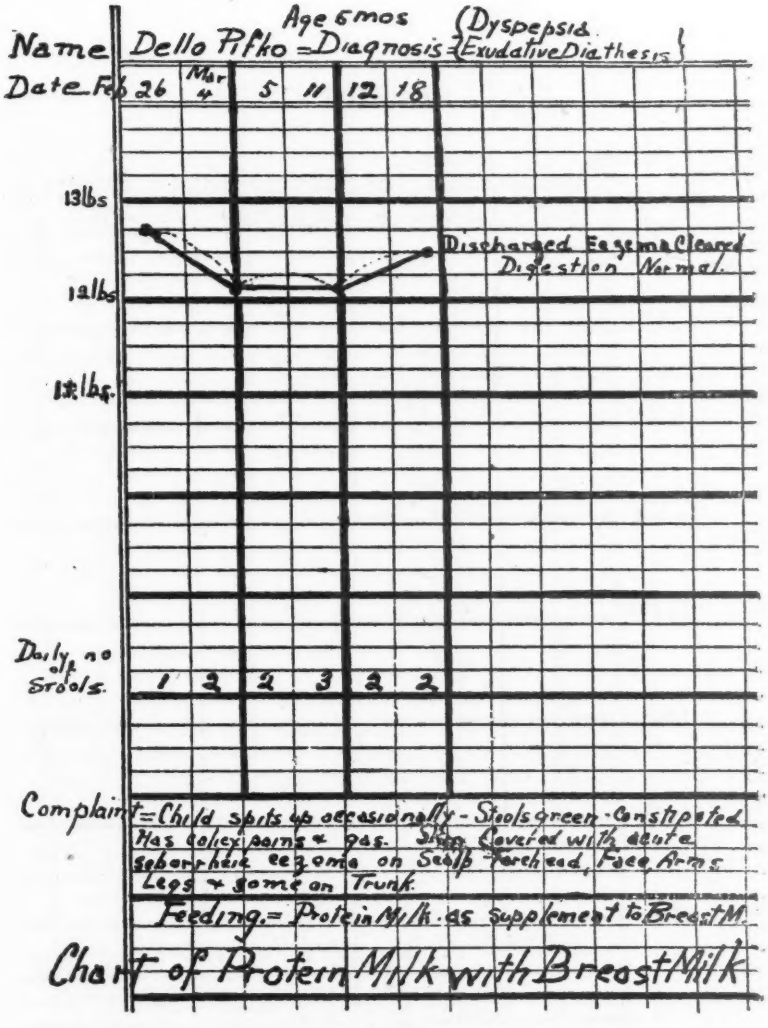

Name John Bowman Age 6 mos Diagnosis Farmer Diarrhoea
Date Nov. 7 14 21 28 Dec 5 12 19
9 lb.
8 lb.
7 lb.
Nasal Blennorrhea
1/2 Sugar
3.3.3.3 Sugar
5.5.5.5 Sugar
Daily no. of Stools
3 3 4 4 5 5 4 4 4 4 2 3

CHART NO. II


Name Dello Pifko Age 6 mos Diagnosis {Dyspepsia Exudative Diathesis}
Date Feb 26 Mar 4 5 11 12 18
13 lbs
12 lbs
11 lbs
Discharged Eczema Cleared Digestion Normal
Daily no of Stools 1 2 2 3 2 2
Complaint = Child spits up occasionally - Stools green - Constipated Has colicy pains + gas. Skin Covered with acute seborrheic eczema on Scalp Forehead, Face, Arms Legs + some on Trunk.
Feeding = Protein Milk as supplement to Breast M.
Chart of Protein Milk with Breast Milk

Six months to one year, forty-six cases, average weight twelve pounds six ounces. Previous feeding for thirty-one, milk mixtures; ten proprietary foods and five were nursed. Thirty-five had diarrhœa in which three had also eczema, seven decomposition and four rickets. Complications were bronchitis, tetany, rickets, furunculosis. Four were moribund on admission, nine acutely ill and thirty-three not acutely ill. Six died and thirty-nine cured, while one was unimproved. They were given an average of thirty-six

CHART No. III

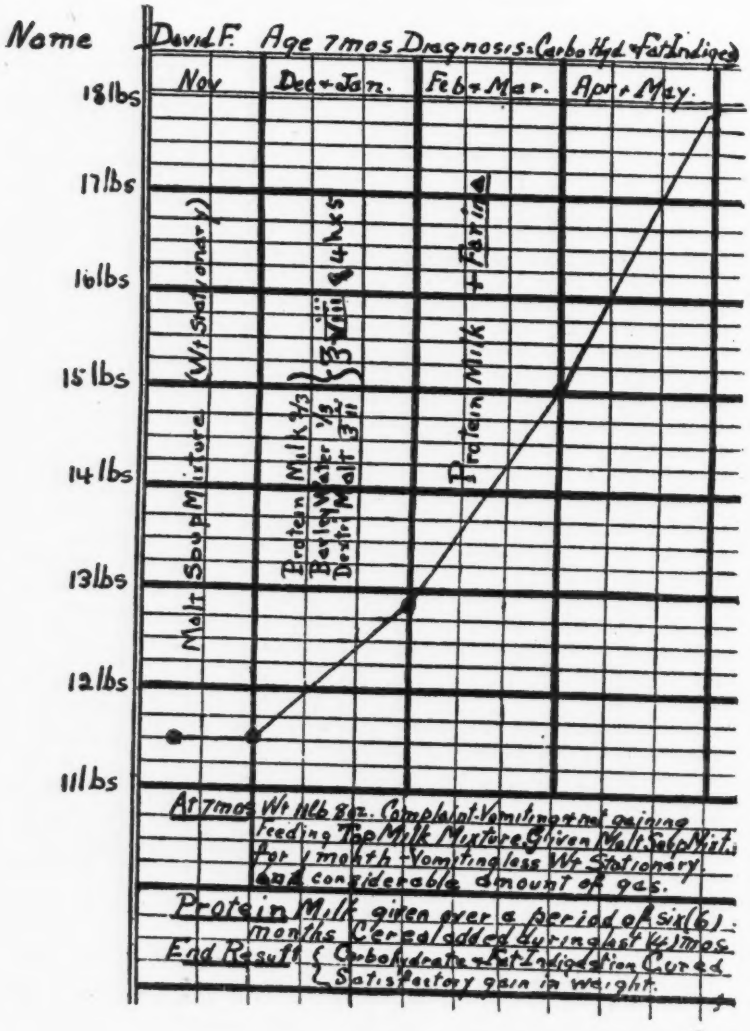
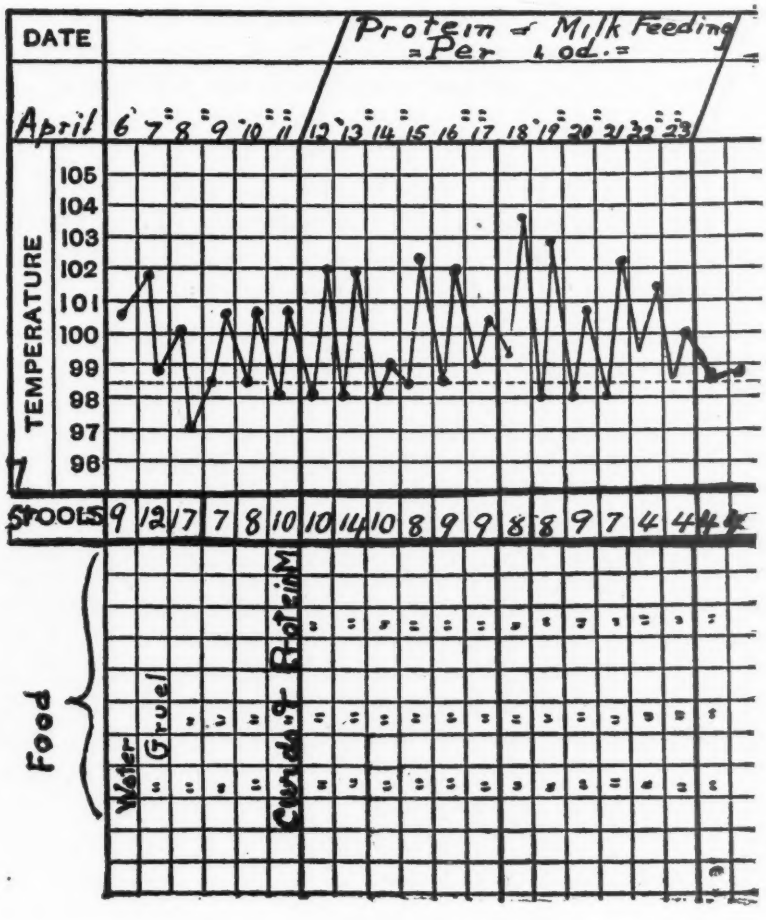

Name David F. Age 7 mos Diagnosis: Carbo Hyd + Fat Indigest
Nov
Dec-Jan.
Feb-Mar.
Apr-May.
18 lbs
17 lbs
16 lbs
15 lbs
14 lbs
13 lbs
12 lbs
11 lbs
Malt Soup Mixture (Wt Stationary)
Protein Milk 3½
Barley Water ½
Dextri Maltose 3ii
3 Viii @ 4 hrs
Protein Milk + Farina
At 7 mos Wt 11 lb 8 oz. Complaint-Vomiting not gaining
Feeding Top Milk Mixture Given Malt Soup Mixt.
for 1 month Vomiting less Wt Stationary
and considerable amount of gas.
Protein Milk given over a period of Six (6)
months Cereal added Vomiting last (4) mos.
End Result { Carbohydrate + Fat Indigestion Cured
Satisfactory gain in weight.

CHART NO. IV

NAME C.C. Age 7 years.

DISEASE Infectious Diarrhoea.



calories per pound protein milk and in eleven days the diarrhœa was controlled enough to add sugar as barley flour and dextrimaltose 1·5 per cent. They lost an average of fourteen ounces, but gained thirteen ounces before leaving the hospital. The average time in the hospital was thirty-two days.

Over one year, nine cases, average weight, fifteen pounds eleven ounces. Three had been fed on milk mixtures, four soft diet and two proprietary foods. Two were acutely ill and seven not acutely ill. Two died and seven were cured. They were given thirty calories of protein milk per pound and in the diarrhœa cases sugar was added after six days 2 per cent. barley flour or dextrimaltose. Rickets and malnutrition cases were changed to soft diet in a week. The average weight lost was ten ounces, and the gain twelve ounces. They were in the hospital for an average of thirty-four days.

The authors desire to express their indebtedness to Muriel R. Farmer, B.A., of the pasteurizing department of the hospital for her coöperation in the work and to Charles Farquharson, M.B., for the preparation of many of the case reports.

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MALARIA IN THE ARMY

By Lieut.-Col. E. J. Williams, D.S.O.

Officer Commanding Canadian General Hospital

THE incidence of a large number of cases of malaria among the troops serving in Egypt, Greece, Mesopotamia and other countries where the disease is prevalent, calls for close attention and the serious consideration of not only the Army Medical Service, but also the whole medical profession.

While men affected with the disease remain in the army, they will come under the care of military medical officers, but, when discharged from the service, the civilian physician will be called upon to treat them.

Under such conditions it would appear expedient to call the attention of the medical profession to the matter as it exists at present.

As has already been stated, a large number of men in the armies in the East have contracted malaria. Some of these men have already returned to England, Canada, Australia, and other countries; many more will follow. The great majority are carriers, and under "suitable circumstances" will spread the disease in the localities where they reside.

The question of "suitable circumstances" is one which demands careful study and in order to follow this question it would be well to consider the opinions advanced by Sir Patrick Manson, Chalmers, Castellini and other authorities on tropical diseases, relating to this phase of the subject.

Although the malarial area is defined as lying between sixty-three degrees north latitude and thirty-five degrees south latitude, cases of malaria do exist far beyond these limits. Malaria exists in England, Canada, Australia, New Zealand and the United States. These are the countries which concern us chiefly at the present time.

Another point to take into consideration is the fact that the geography of malaria may alter very considerably from time to time and, while one part may become less, others may become

more malarial. This is due, no doubt, to conditions other than temperature alone. Of these conditions, one of the most important is atmospheric moisture. The low lying, undrained, swampy areas are the most favourable for the development of the anopheles mosquito, the carrier of the plasmodium malariæ, and it is in such places that the disease is most commonly found.

A malarial area may, however, be "created" by the damming of small streams and so causing a flooding of the adjacent land, or again pools may form along the edges of a stream and prove a breeding ground for the anopheles. These two conditions were potent factors in the spread of the disease in high level areas occupied by the troops in the East.

The influence of the rain fall in causing augmentation of the disease could not be determined with any certainty in the Salonica area.

The presence of trees, shrubs, plants, grass in the vicinity of flooded or swampy areas and along streams favours the development of the anopheles as these latter seek protection in such places in the day time. There may be areas which answer all the "requirements" from a geographical and climatological standpoint and still no malaria exists. On the other hand, in places which have few of these "requirements" malaria may be quite common. So, in studying the etiology of this disease, we must disabuse our minds of the idea that development of the disease will take place *only* in low lying swamps and morasses.

Mention may be made of certain conditions which tend to precipitate an attack of malaria in individuals in whom the disease seems to have been dormant (latent malaria) and also which may cause relapses and recurrences in those who have already suffered from previous attacks. Of these conditions we might note:

1. A change from a warm to a cold climate.
2. Increased activity causing extreme fatigue.
3. Sudden change in one's mode of living such as, change of diet, hours of work, reduced period of rest and sleep, etc., all taxing the internal economy of the human system and rendering it less resistant to the influence of micro-örganisms.

In the East the two commonest factors which acted as exciting causes were: (1) Exhausting work; (2) High temperature.

The largest number of cases admitted to hospital occurred in the hottest months of the year, viz.: July, August and September, while extreme fatigue following a long march was noted as a very common condition in many of the cases of relapses.

Immunity. It has been stated that certain races and certain individuals are less susceptible to the disease than others. The negro of Africa and the West Indies, the Chinese and the Malays, seem to enjoy comparative immunity and although some cases do occur in these races, they are, as a rule, of a mile type. In the matter of individual immunity, the same thing also seems to exist, the reason for such being as yet unknown.

In the Salonica army there were hundreds of cases of men exposed to infection for a period of two years and yet in whom the disease did not develop. In many of these cases quinine had not been taken as a prophylactic measure.

The question as to the value of quinine as a prophylactic is one which was closely studied in different hospitals in Salonica, and the consensus of opinion of medical officers consulted was that such a measure is of doubtful value.

It may be of interest to record some data in connection with our experience with malaria in the personnel of our hospital. The total personnel numbered one hundred and sixty-three.

Development. No cases developed until the first week of July, 1915, during which month there were eighteen cases. This corresponded with the commencement of the disease in the army generally, in Salonica.

So we may state with a fair amount of accuracy that the malarial season in that section of country commences at that time. During the month of August there were twenty-six new cases; in September, twenty; in October, eight; in November, two; in December, nil; in January, 1916, five, February to June, six; July, seventeen; August, nil. These figures refer to primary attacks only.

Recurrences. The rates of recurrences were very irregular, depending on the occurrences of such contributing causes as:—extreme heat or cold, increase of duties in the hospital, and the incidence of minor ailments which reduced the vitality and resisting power of the individual.

The number of recurrences during a period of sixteen months varied from five to twenty, the average number being nine.

Quinine in doses from 10 to 20 grains daily for three months, and every third day for three months, and then once a week was being administered to all these patients during the period when these recurrences took place.

The return of the unit to England heralded a repetition of recurrences which had not been experienced by some of the patients for two months.

Types. The type most commonly met with was the benign tertian, there being only eight of the malignant type.

Complications—A very common complication was an obstinate diarrhœa which at first was attributed to medication, but later was found to be due to a mixed infection of bacillary dysentery and malaria. This was quite common in the cases of men of the unit, as over fifty per cent. had suffered from bacillary dysentery on the Island of Lemnos during the summer of 1915. Thanks to the splendid work of Captain Graham (Toronto General Hospital), this was detected early in the season and so appropriate treatment instituted.

Anæmia. This was marked in over fifty per cent. of all cases and was commonly accompanied by emaciation due to the inability of the patients to take or assimilate food during the attacks which in many cases recurred frequently. The large doses of quinine taken, may also have been a contributing cause. No cases of so-called malarial cachexia were noted in the personnel.

Cardiac dilatation was a very common condition in recurrent cases and one which might be easily overlooked unless sought for. This feature should be carefully observed as improvement is very slow under the most careful treatment and if neglected may result in permanent disability.

The above were the common complications met with in the series of cases under discussion. The statistical table given below may give one a clearer idea of the situation.

Personnel	No. of Cases of Malaria	Date of Development											Max. No. of Recurrences	Min. Recurrences	Types			
		June—1916	July—1916	Aug.—1916	Sept.—1916	Oct.—1916	Nov.—1916	Dec.—1916	Jan.—1917	Feb.-June	July—1917	Aug.—1917			Average Record	Benign	Malignant	Other
163	82	0	18	26	20	8	2	0	*5	6	2	0	20	4	9	70	8	2

* Developed on return to England.

Treatment. The question as to the absolute cure of the disease by the administration of quinine, arsenic and other drugs, is still unsettled. One thing is certain, viz:. to prevent a recurrence

of the malarial symptoms of a patient, a systematic, prolonged course of treatment is necessary. The form of quinine best suited to combat the disease, the length of the period over which the treatment shall be continued, the procedure adopted for the carrying out of the treatment are matters worthy of consideration.

Form of Drug. Quinine has long been recognized as the one drug which acts most favourably on the plasmodium malariæ. The value of the drug is enhanced by the addition of arsenic in the majority of cases.

The tablet or powder form has not proven as efficacious as the solution with sulphuric acid. The sulphate of quinine in the acid solution is the most commonly employed form for administration by mouth. However, in some cases where the desired effect is not obtained, the hydro-chloride or bi-hydrochloride in solution has been given with better results. The dose of the sulphate is from 20 to 30 grains daily, of the hydrochloride or bi-hydrochloride, 7 to 15 grains.

The intramuscular method has met with better results on the whole than that by mouth. Still, abscess formation at the site of the injection is not uncommon, and so this method does not meet with general favour. The bi-hydrochloride is used, the dose being from 5 to 10 grains.

The intravenous method is, without doubt, the most efficient and, where ordinary care and skill is shown, practically devoid of danger. The action of the drug is much more rapid and the amelioration of the symptoms more marked than in the other form of administration. 5 to 7 grains are given in 200 to 300 ccm. of normal saline solution once or twice a day. In severe cases 30 grains may be given in twenty-four hours. In malignant cases, and especially those of the cerebral type, this is the only form of administration which seems to produce any appreciable effect. The administration of arsenic in addition to quinine is advisable in practically all cases.

The length of period over which the drug should be administered is estimated differently by different authorities, some advising a daily dose for three months, others intermittent dosage over a period of from twelve to eighteen months.

From the experience with the troops in the East over two malarial seasons, where recurrences of attacks during the second summer in those who had suffered with malaria during the first season were so common, the twelve months period of treatment seems to be the minimum.

It must be admitted that in only a small minority of the cases was the treatment carried out faithfully, still, even in this class, recurrences were not uncommon.

The following schedule would appear to meet all requirements:

For the first three months, 10 to 15 grains quinine daily.

For the second three months, 10 to 15 grains quinine three times a week.

For the third three months, 10 grains quinine twice a week.

For the fourth three months, 10 grains quinine once a week.

However, no definite statement can be made in this matter until a large number of cases have been observed where the systematic treatment is carried out over a long period.

The treatment by the intravenous method for all cases might solve the problem of cure and ere long we may see this procedure carried out just as is done in cases requiring "606". As this procedure has not yet been adopted, nothing definite can be reported.

The question as to how this systematic treatment can be carried out is a difficult one.

In the Salonica army a quinine parade is carried out in many units and so a close check kept on the treatment. This is only practicable in areas where large numbers of troops who have suffered from malaria are stationed for a long period. When these men are scattered to the four corners of the world where malaria is practically unknown, the treatment must be left to the individual to carry out.

Something might be accomplished by instructions issued through circular letters to the patient from time to time embodying details as to course of treatment, etc. A report from the patient might be rendered to the D.M.S. once a month, compiled and signed by a medical officer in the area in which the soldier is located.

The efficiency of the procedure would depend a great deal on the sincerity of the patient and this could be strengthened by a constant effort on the part of the medical service to keep in touch with and instruct the patient as to the absolute necessity of following out a systematic treatment over a long period, in order to prevent a recurrence of the disease.

Conclusions

1. A large number of malarial patients will be distributed in different countries where, previous to the war, very few existed.
2. Granted the presence of the anopheles mosquito, there is a likelihood of the disease spreading in these localities.
3. The influence of high temperature and hard labour is very marked as causative factors rendering the individual susceptible to infection and recurrent attacks.
4. The value of quinine as a prophylactic measure is doubtful.
5. The commencement of the "malarial season" in Macedonia dates from the latter part of June. This may depend on the nature of the season as regards continued high temperatures. The marked subsidence in primary cases dates from the month of October.
6. The most effectual form of treatment is the intravenous method.
7. Treatment must be continued over a period of from twelve to eighteen months.

The Army Medical Service of Great Britain has achieved a wonderful record. It has met and successfully combatted typhoid fever in a manner undreamed of in earlier centuries. In the South African War 57,000 casualties occurred from this disease alone. In the Napoleonic wars 97 per cent. of the deaths was due to typhoid fever. The percentage in all the theatres of the present war does not amount to 4 per cent. Had the experience of the South African campaign, in which 63 per cent. of the deaths was due to typhoid fever, been repeated in France the casualties would have exceeded half a million, since the strength of the South African army rarely exceeded 200,000. This mean that the British Army Medical Service has added to the strength of the Army half a million men.

ABSCESS OF THE LUNG

By W. A. Wilkins, M.D.

Radiologist, Montreal General Hospital; Consulting Radiologist Drummoud Street Convalescent Home; Demonstraton of Radiology, McGill University

ABSCESS of the lung, at times forms one of the most formidable problems with which we as roentgenologists have to deal. The extreme seriousness of the disease demands that we exert ourselves to the utmost, and the frequently indefinite *x*-ray appearances make the task of interpretation a difficult one. In addition, the patients are often so ill that their condition may handicap us at the examination. It is true that large cavities do not often present difficulties, but the exact localization or even recognition of the smaller ones will tax our powers; and these are the very cases in which our services are most desired.

Occurring as it generally does as a secondary process during some existing disease such as pneumonia, the clinical signs of the complication may be so confusing that the internist may be unable to do more than suspect its presence, and at the *x*-ray examination, the abscess may be so small or so masked by the original disease, that we, too, may be unable to speak positively—the shadow of the primary disease entirely obscuring the shadow of the early abscess. The inability to find it at the *x*-ray examination does not necessarily exclude its presence, but it is strong presumptive evidence of its absence, or at least of its inaccessibility to surgery; and, moreover, it has been my experience, that no matter how suggestive the clinical case may be for abscess, if it is not supported by the *x*-ray findings, surgical intervention is likely to be of little service, and may even be disastrous.

Although this paper is presented to a gathering of roentgenologists, it does not follow that we are concerned only with what we see on the screen or plate. We much go farther and enquire into the why and the wherefore of what we see. We must utilize our

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knowledge of pathology and study the course of the disease as revealed by the chart and by the clinical history. A negative tap is undoubtedly of value in excluding empyæma and the fœtid odour of the breath or the finding of elastic tissue in the sputum is indicative of the destruction of lung tissue. Everything that has a bearing on the case should be considered in connexion with the reading of the *x*-ray plates. In many cases an *x*-ray diagnosis may be warranted without clinical information, and these are generally the cases in which the clinician would be able to assert his diagnosis without the aid of roentgenology. Further, one must be careful not to be biased in his interpretation by information received from other sources; but this information should be made to bear directly upon the case, being either corroborative or exclusive. I believe that if at times we fail in the diagnosis, it is because we no not dovetail the clinical evidence of a pathological process with the *x*-ray evidence of a pathological process; we are more concerned in giving a name to a disease than we are in describing and interpreting what we see with the screen or on the plate. In our anxiety to label the condition, we neglect the physics of *x*-ray light and the pathology of the human body, so that our so-called "interpretation" may be really nothing more than a shrewd guess. It is reasonable to expect that the shadow cast by the results of the reaction of the tissues to invasion should not differ markedly from one another in the quality of the shadow, in such conditions as pleurisy, empyæma, pneumonia, abscess, etc.; accordingly the mere presence of the shadow cannot be diagnostic of any one condition except insofar as the special pathology of the disease may influence it. Although the first step in the diagnosis is the recognition of a shadow, it is really with the special pathology of disease which we must deal in the interpretation. If at the *x*-ray examination of the chest, a shadow is present in a situation where normally it should be clear, it merely means that some pathological process is present in the chest wall or within the chest. The situation, distribution, size, shape and quality of the shadow must all be carefully analysed and be in accord with the underlying pathology of the disease; and further, if a diagnosis of abscess is made, our duty does not end there, for we must be able to state definitely the situation of the lesion. It is of vital importance for the surgeon to know from which point on the surface of the body, the abscess is most accessible. This information will be available if the diagnosis is accurate.

Is is feasible to consider abscess and gangrene together. Each

results from the destruction of lung tissue; if the destruction occurs "*en masse*," gangrene is the result; if molecular, abscess. Perhaps a distinction could be made between them roent genologically, the central "core" of the gangrenous mass being surrounded by a small quantity of air, differing from the "air above and pus below" appearance of abscess. Personally, I have never accomplished this.

Regarding the cause of abscess, it may be said to occur almost invariably as a secondary process, pneumonia being by far the most frequent cause. It may also occur in empyæma, malignancy, suppurative conditions of the mediastinum or in suppurative conditions below the diaphragm. It may arise even in a healthy lung as from septic emboli, foreign bodies or from trauma, but it most frequently occurs in a lung in which some pathological process is already present. It may be single or multiple. Its situation may be anywhere, but appears to occur eith greatest frequency in the right upper lobe, the left lower lobe being next in frequency. Its size may be less than one inch in diameter or as large as the entire lobe. It may be single or multiple. It is generally more or less circular in outline. The contents are ordinary pus and air plus the remains of partially disintegrated lung tissue. The walls of an abscess cavity consist of three layers, an inner necrotic, a middle infiltrated with inflammatory products and an outer consisting of more or less œdematous lung tissue. If the process of formation has been slow, a limiting membrane of new fibrous tissue will be formed. These are the conditions present, the shadows of which we endeavour to identify on the plate. It is not possible to recognize each constituent of the wall as a separate entity, but all three combined are sufficiently developed to produce a contrasting shadow of demarcation. If evacuation of the abscess has been complete, cicatrization of the entire area may take place producing a uniform shadow on the plate. Generally a certain amount of air is present in the cavity which gives to it the typical appearance especially in the vertical position.

As nearly all pathological processes of the chest cast shadows on the plate, any one of them is likely to be confused with abscess; accordingly it is necessary to consider the special features of the more important ones in order to determine in what manner they may differ from abscess. It has been my experience that bronchiectasis frequently presents difficulty in recognition with any degree of certainty, and the clinician is as frequently undecided between it and abscess. At the *x*-ray examination, in spite of the great differ-

ence in pathology, the indecision may remain in certain cases, or one may say with greater emphasis, under uncertain conditions. Clinically the case may simulate abscess, the odour of the breath may be pronounced, and the *x*-ray examination suggest small multiple abscesses. If the condition is marked, and our examination is satisfactory, little difficulty will be experienced, for the shadows of the dilated bronchi with thickened walls generally filled with secretion, is characteristic of no other condition. These are seen on the plate both longitudinally and on cross section. The appearance will vary, depending upon whether the dilated bronchi contain secretion or not. If empty, the large white circles of the thickened walls of the bronchi on cross section and tubular appearance longitudinally will be seen. If containing secretion, the clear appearance of air will be replaced by shadow.

Pleurisy, with effusion, under ordinary circumstances, is not likely to be confused with abscess. The shadow generally commences at the base obscuring the diaphragm, and extending upward to a varying extent, thins out at its upper limit. Its free edge is more or less linear and the shadow is generally a large one, often occupying the whole of one side. The lung area above the fluid level frequently exhibits increased radiability, as may also the lung of the other side. Displacement of the heart shadow is the rule in left-sided effusion. These features are sufficient to prevent it from being confused with abscess; in fact it has little in common.

Empyæma, if extensive, presents the same general features as pleurisy, although the shadow is usually denser. If small, as is more frequently the case, it may require to be distinguished from abscess. Its situation at the base, its more or less irregularity of outline due to adhesions, and its more uniform density and the absence of air from the shadow are points in favour of empyæma. Interlobar pleurisy or empyema may lead to great difficulty in diagnoisis, but the situation and shape as determined fluoroscopically or with stereoscopic plates are generally sufficient to avoid error. Pneumonia often presents difficulty in diagnosis. The characteristic appearance of pneumonia is unmistakable, but so often before resolution has occurred, the question of abscess will arise and the consolidation of the pneumonia may mask or hide the shadow of early abscess. No difficulty will be experienced in recognizing the pneumonia, but difficulty may arise to decide whether abscess is present. The presence of free air would be indicative of cavity formation. Even the thickened pleura may cast a shadow not

unlike a dense abscess. The irregularity of outline, its more or less uniform density and the absence of air serve to differentiate, and stereoscopic plates will show the true position of the shadow. In addition, the clinical history will have little in it to suggest abscess. New growth, either from the pleura, lung or mediastinum, is not likely to be confused, the sharply defined demarcation and uniformity of the shadow being characteristic. Nor is aneurism likely to lead to error.

Regarding the technique of the *x*-ray examination, little need be said, fluoroscopic examination and stereoscopic plates generally reveal all the information desired. Besides being of great value as an aid to diagnosis, the fluoroscopic examination is valuable in localization. By manipulating the patient and observing the differences in density or distortion with the screen anteriorly and posteriorly, one is able to obtain fairly accurate information concerning the situation of the abscess. Stereoscopic plates afford an excellent opportunity to study the condition at leisure. Single plates made in one plane only are far from satisfactory, and even when sufficient to establish the diagnosis, convey no information concerning the location of the abscess. The examination should be made in the vertical position whenever possible, but unfortunately many of the patients are too ill to permit of this procedure. This difficulty may be overcome to a great extent by means of a tilting table. Failing this, one will have to content himself with the horizontal position. The *x*-ray appearance of abscess is so well known that description of it may be superfluous. Nevertheless it is by no means a constant picture. It is the result of a cavity which contains fluid pus and air generally in the midst of pathological lung tissue. There is a limiting membrane more or less circular or oval, containing in the vertical position a lower dense shadow and an upper of clear air. The proportion of the two latter will vary, depending upon the size of the abscess and the quantity of secretion present, the upper level of the fluid being horizontal in the vertical position. In the horizontal position, the sharp division into two areas is not seen, and the abscess may be represented either as an area of increased density in the midst of a dense area of pathological lung; or have a more or less mottled appearance due to the presence of air. Again, if the cavity is empty at the time of the examination, it may appear as an area of increased radiability, the appearance of an air-containing cavity. In gangrene where the destruction has occurred "en masse", the dense

shadow will be central surrounded by a rim of air. This is seldom seen or recognized.

In concluding, I would emphasize that to obtain the greatest value from the *x*-ray examination, it is of supreme importance that the roentgenologist work in collaboration with the internist. It is best to see the patient together, preferably at the screen examination, or, if this is not possible, to at least consult over the plates.

Case Reports

TWO CASES OF DERMOID TUMOURS COMPLICATING PREGNANCY, WITH OPERATION

By. J. N. Hutchison, M.D.

Winnipeg

THESE peculiar tumours, which are more or less common, are no doubt congenital in origin. Numerous theories have been advanced as to their cause, but these I shall not discuss. Various locations are the eye, mouth, brain, mediastinum, mesentery, the favourite location being the ovary. While congenital in origin, they frequently develop in the early years of life, but may, and often do, remain dormant until long after puberty—a favourite period for their development being the child-bearing period. One authority reports eighteen cases occurring in early life as follows: five in virgins under twelve years of age, six in children six months to two years, four in female fœtuses at birth, three in fœtuses prematurely delivered. They vary in size from a hen's egg to that of an adult head, but may be much smaller or much larger. Their consistency is hard, usually round and smooth with sometimes bony projections. Occasionally both ovaries are affected, but usually only one, and there may be several cysts in connection with the same ovary. Howard Kelly reports that in eighty-seven cases the dermoid was unilateral in all but one in-

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stance. Their contents are usually fat, hair, teeth, traces of bone or cartilage, cholesterin and even brain and nerve tissue. Teeth, when present, are usually embedded in the cyst wall or attached to pieces of bone and occasionally are very numerous, one case being reported with three hundred present. Although in themselves harmless, they sometimes become very serious and should therefore always be removed wherever possible. The usual dangers are:

1. Suppuration and rupture into the peritoneum or perforation into the bladder or the bowel.
2. They may develop into large ovarian cysts filled with fluid.
3. They may become twisted on their pedicle and set up serious and even fatal inflammation.
4. They may become malignant in character.
5. And lastly, they may become a serious obstruction in pregnancy, as occurred in the two following cases in my own practice.

Case No. 1. About seven years ago the writer was engaged to confine a lady in her second pregnancy, she being at the time in the third month. When five months had passed, her attention was called to a rather large tumour in the right upper abdomen which resulted in my being called to visit the patient. Examination revealed a tumour about the size of a cocoanut, which was so movable it could be pushed to the left side, up under the lower right ribs, or into the lower right abdomen. The uterus could be distinctly outlined as a separate mass just below the umbilicus. A tentative diagnosis of dermoid ovarian cyst was made. On opening the abdomen I found the tumour had suddenly disappeared, but on inserting the hand and passing it up under the lower right ribs it was found and drawn outside the abdomen. Examination showed it to be a dermoid cyst of the right ovary, having a pedicle three or four inches long. It was easily removed, the patient making a good recovery and giving birth at full term to a strong healthy child.

Case No. 2. In December, 1916, I was called one night about eleven o'clock to the General Hospital to attend a patient, a primipara at full term, whom the nurse reported to be having violent and frequent pains with a great deal of bearing down. The membranes had ruptured. The patient, a woman of about twenty, and very small, weighing about ninety pounds, was on the operating table. Expulsive pains were very strong and frequent, but there

was no protrusion of the perineum, and apparently no progress being made. On examination I found a large mass completely filling the pelvic cavity but which evidently was not the uterus. For some considerable time I was unable to find the os. Finally it was located well up in front of the pubic arch. On inserting a finger into the os and sweeping it round the circumference, it was apparent that the growth was external to the uterine cavity. A further rectal examination showed it was also external to the rectum, hence it must be in Douglas's cul-de-sac or in the uterine wall; the former being the much more likely. At this time it was midnight, but two or three other medical men were in the hospital and were asked to examine the case. Various diagnoses were suggested—dermoid cyst being the most likely as the growth appeared to be round and smooth except in one section where it appeared very hard and somewhat uneven, as if bony. The mass was quite immovable. There was but one opinion as to the necessity of immediate Cæsarean section. This I did without delay, she having been already in labour several hours. As the patient was pretty well exhausted, no further attempt was made to diagnose or remove the growth. She made an excellent and uninterrupted recovery. At the end of three months I had the patient again removed to the hospital where I opened the abdomen and found a large dermoid cyst completely filling, and packed down tight, into the pelvic cavity. It was quite adherent to the surrounding tissues. Carefully it was stripped free and found to be a growth of the right ovary; it was then quite easily removed. The patient made an excellent recovery and is now enjoying the best of health.

Each of the two specimens I present to-night for inspection. The first has a mass of hair but no teeth. The second also has a large mass of hair, a large piece of bone in its wall and in this bone are a number of well-formed teeth. Each cyst was filled with fat and a fluid resembling pus but which was simply fat, broken down tissue, cholesterin, etc.

Dr. H. McEwen, medical inspector of the schools in British Columbia, reported that the health of the pupils is satisfactory. Since the beginning of the year he has made 1,925 inspections out of a total school population of 2,412; in March he made three hundred and seventy-five physical examinations. The school nurse reported that in March she made twenty-three house visits and gave four hundred and seven treatments and dressings.

National Mental Hygiene

THE ORIGIN, ORGANIZATION AND SCOPE OF THE CANADIAN NATIONAL COMMITTEE FOR MENTAL HYGIENE

By Evelyn Molson Russel

Member of Canadian National Committee

DESPITE the very great advances made in medical science of recent years, how many of our practitioners in Canada to-day realize that an approximate 75 per cent. of the inmates of our jails, about 50 per cent. of our juvenile offenders, from 75 to 80 per cent. of our prostitutes, and a goodly percentage of our cases of pauperism, non-employment, illegitimacy and intemperance are really cases for our medical men, rather than for our judges and their courts? Nine years' work of the National Committee for Mental Hygiene in the United States is presenting us with startling statistics to this effect. To all thoughtful workers in social and philanthropic reform for many years past, there has been the realization that they are pruning the dead branches only, when the trouble really lies at the root, that a thoughtful protective care of the roots would soon result in a great improvement in the general health of the wide-spreading branches of our social life. This is the *raison d'être* of our new Canadian National Committee for Mental Hygiene, an organization which will coördinate the efforts of modern psychiatric science and social service to search out the mainsprings of disease and treat them, rather than working on as has been done in the past, working from the outside inward, and treating the symptoms rather than the disease itself.

It is impossible in an article of this length to deal with all the phases of the work already accomplished or to be aimed at by the American Committee, nor to refer personally to the many eminent men who have done so much towards the success of its undertaking. I have endeavoured to make as accurate and comprehensive a sketch of its history and work, and of our own new Canadian

development as has been possible in the present space, and from the material I have had at my disposal.

The National Committee for Mental Hygiene in the United States, the pattern for our new organization, had a most interesting origin, which is intimately bound up with the life history of Mr. Clifford W. Beers, a man who some eighteen years ago had personal experience as a patient-inmate of various state institutions for the insane. He came out of his three years' confinement in 1903, not only sound in mind and body, but with a clear remembrance of all his experiences and with the definite purpose of exposing the existing conditions under which he had himself suffered, with the object of securing their reform. His first step was to re-establish himself as a normal individual in the business world, and he did this effectively by working successfully for a year and a half for the same firm with whom he had been previous to his illness. Having thus proved his mental stability and power, he proceeded to write his experiences. While yet in manuscript, he sent proof copies of his book to various men, leaders in education, mental study and social and philanthropic work, chief among whom were, fortunately for the success of the undertaking, Professor Adolf Meyer, then of Ward's Island, New York, and now Director of the Phipps Psychiatric Clinic at Johns Hopkins Hospital, Prof. Wm. Welch of Baltimore, and Prof. William James of Harvard. Dr. William James gave him a letter of appreciation attesting the psychological value of his book,* which resulted in its immediate publication by Longmans Green & Co., who have just brought out a fourth revised and enlarged edition. The book created a profound impression as an accurate descriptive statement of the mental history of an individual during the stages of an acute psychosis, as well as conveying definite information about numerous abuses in the care of the insane which demanded remedial action. Dr. Adolf Meyer, whose profound knowledge of the scientific, medical, and social problems involved in the prevention and treatment of early psychoses had long been recognized, received Mr. Beer's information and his book with the consideration which was their due, and directed his efforts into constructive channels. To Dr. Meyer we also owe the happy term "Mental Hygiene." No matter how widely its activities spread in mental fields, the committee cannot outgrow the expression of its aim. Its work has been a great movement towards the co-ordination of

* A Mind that Found Itself.—By Clifford W. Beers. Longmans Green & Co. 4th Edition, 1917.

existing efforts, not only in asylum reform, but also in preventative work in insanity and in the investigation of the mental factor in crime, prostitution, and the various other social evils which come under its scope. One of the great elements in its success has been the appointment of Dr. Thomas W. Salmon as medical director. Dr. Salmon had served for several years as officer of the United States Public Health Service, had been a member of a medical staff of a State hospital and later chairman of the Board of Alienists of the New York State Hospital Commission, and his wide experience and great ability has enabled him to place the work on an effective basis. The Rockefeller Foundation has also been a most potent influence in the committee's work, through its moral support and liberal contributions. It has also conducted many surveys relating to the insane and feeble-minded, has made statistical studies, demonstration studies in the psycho-pathology of crime, and has also done special war work—all in co-öperation with the National Committee.

Dr. Salmon's work also shows in the influence brought to bear on the organization of the Medical Corps of the American army, so that no American soldier enters the army without a mental examination forming a part of his medical tests. This will undoubtedly reduce the vast number of "shell shock" and other mental cases which have been a burden in our army, recruited as we were at the first plunge into war, with no time or experience to appreciate the great importance of the mental fitness of our men. An increased number of psychopathic wards in connexion with various hospitals where cases of simple depression and other nervousness may be dealt with in the early stages and more serious mental illness be thus prevented, the wider establishment of psychiatric clinics in connexion with jails, juvenile courts, etc., are also said to be due to the efforts of the American National Committee towards education and creation of public opinion in these directions.

Though much special work along many of these lines has been done in various individual groups in Canada, it is to Dr. Clarence M. Hincks, of Toronto University, that we owe the co-ördination of effort which has resulted in our new Canadian National Committee for Mental Hygiene. His was the vision which, having a keen appreciation of our needs in Canada, combined a power of organization with unusual energy and enthusiasm. Learning of Mr. Beers' work and the National Committee of the United States, he set to work to rouse the public interest in the need for such a

work in Canada. Leading men from all parts of the Dominion have taken up the work with interest and Dr. Hincks has the gratification of feeling that a work so auspiciously begun cannot fail to succeed.

At the organization meeting in Ottawa, on April 26th, a provisional constitution was adopted—practically a slightly altered copy of that of the United States. The personnel must consist of one third medical men, one third non-medical, the remaining one third being unspecified. The non-medical third must include a good proportion of sound business men, educationalists, philanthropists, and social workers. The right man has been put in the right place when Dr. Hincks was unanimously elected Secretary of the Canadan Committee.

The committee is being financed at its start by private subscription, $75,000, or a budget of $25,000 a year for three years being necessary. Of this, some $50,000 has already been subscribed. It is not too much to hope that in time our committee, working on so truly national a question, shall receive not only the national moral support which it deserves, but also the financial support of the country through its representatives.

The strong bearing that insufficiently restricted immigration, alcoholism and venereal diseases, have upon the mental health of the nation, make these subjects of vital importance to the Committee. Some statistics, drawn from reprints distributed by the National Committee of the United States, show us what their experience has been and offer us a foundation upon which to work.

In immigration, the laws of the United States in 1875, excluded none but criminals and prostitutes, in 1891 idiots and insane were debarred entry, in 1903 epileptics were added to the lists, and in 1907 the great danger from imbeciles and the feeble-minded was sufficiently realized to cause them also to be refused entry into the country. The study and understanding of them has also increased, and from the statistics given by Dr. L. L. Williams, chief medical officer, Ellis Island, N.Y., we find that instead of a yearly average of 120 feeble-minded excluded during the years 1908–1912, there were 483 turned back in 1913. The regulations regarding deportation have also been made much more effective. That those suffering from mental trouble within two years of landing in the country might be deported, did not give a long enough period to protect the country's interests. The two-year period was changed to three years, and again in the last year or two it has been extended to five years. In 1913 on the two-year basis there

would have been two hundred and twenty-two deportations from the New York State hospitals alone. As a matter of fact, the three-year ruling was in force, and three hundred and ninety-nine were returned to their native countries. Now if the five-year basis had been in operation, six hundred and six cases would have fallen under its ruling. We, in Canada, still work under the two-year limit.

Robert deC. Ward, in the *Institution Quarterly*, official organ of the Public Charity Service of Illinois, states that in 1900, 20 per cent. of the total population of the country was foreign born, whereas the foreign-born proportion in insane asylums was 34 per cent. Other statistics show that foreign-born mothers bear two children to every one child born to a native-born mother. The danger suffered through immigration leakages is thus forcibly presented to us. Now, in 1912, there were only twenty-one medical officers in the Public Health Service at Ellis Island. Four or five thousand immigrants a day passed through their hands for inspection, which Dr. Williams states allowed exactly eighteen seconds for each primary inspection! Eighteen seconds in which the doctor must decide whether the individual was fit for admission into the United States! Because if passed on this first inspection, an alien excapes all further examination. The cost per head in 1911 came to sixteen cents. I quote from Dr. Salmon: "The pay and allowance of twenty additional medical officers of the Public Health Service with special training in psychiatry, for duty at American ports, would be about eight cents for each immigrant examined." Another great leakage is in children under five, as only idiocy and imbecility are quickly recognizable at that early age. Through lack of any medical history of parents, etc. (often their only means of deciding the probable fitness of the child), many mentally deficient children are passed by the inspectors.

Many reforms are suggested in the States, for example: an examination of prospective immigrants before they break up their homes in their native land—the raising of the head tax and employment of increased funds in enlarging the staff of medical officers—the placing of a medical officer on board ship so that he may study the immigrants during the voyage, and discriminate more readily between desirables and undesirables on arrival in port.

At Sing Sing, through the psychiatric clinic, it was found that of six hundred consecutive admissions in nine months, 66.8 per cent. had already served one or more terms in prisons or reforma-

tories. Of these 59 per cent. showed mental or nervous abnormality, in that 12 per cent. were insane, 28·1 per cent. were mentally defective, and 18.9 per cent. were psychopathic. 75 per cent. of the total six hundred were mentally abnormal.

In connexion with our Canadian immigration, Major J. D. Pagé, chief medical advisor of the Port of Quebec, states frankly that "If the character of the examination of the immigrants was what it should be, or what it already is in the United States, they would not have found last year (1914) at the clinic for the feeble-minded of the Toronto General Hospital, two hundred and twenty-two feeble-minded persons born outside of Canada, against two hundred and three native born." He shows that his staff is too small, too poorly paid, and not sufficiently scientifically trained to cope efficiently with the work. "The Immigration Medical Service being only a side line for the port inspectors who live chiefly from their private practice, it is nothing but natural that they take very little or no interest in it outside the inspection rooms. They go to the ships according to a system of rotation which cannot always be adhered to on account of their being engaged somewhere else when wanted, so that occasionally four or five of them have to be called before you can get the number required. You will agree with me that under such conditions no earnest training for this very special and difficult work of necessarily rapid inspection can be obtained." In the United States they have calculated that "the expense saved to the State by the rejections at the time of examination was greater than the compensations paid to the physicians of the immigration service." We must be ready in Canada for a large flow of immigration after the war, whenever that day may come, and we must see to it that the failings of the past are remedied in advance and that an adequate and well-trained staff be in readiness. "Though no head-tax is imposed on European immigrants, every Chinese immigrant to Canada must pay $500 to enter. The collections from this source alone, during the years 1911–12, 1912–13, 1913–14, amounted to $9,217,500 against, during the same period, a total expenditure for immigration of $3,834,899.95, thus leaving in the treasury a net benefit derived from immigration of $5,382,600.05. Surely no one should find fault if part of this clear revenue was used for the purpose of reforming the Canadian Immigration Medical Service."

The question of compulsory education and a psychiatric examination of every child, with a following up segregation of backward and mentally deficient children, would reach the evil in its

early stages and before the individual could propagate further of its kind. The establishment of farm colonies where the mentally deficients, wherever found, could be placed and segregated, must also be considered.

The close relationship between alcoholism and syphilis in mental disease and abnormality is now well recognized, and that syphilis brings so frequently to the patient an insanity in later life, and to a large proportion of the children of the diseased, mental deficiency or abnormality of some type. Dr. Gordon Mundie recently stated to a gathering of social workers that not until syphilis became a disease reportable by law just as scarlet fever, smallpox, and diphtheria, would we begin to cope with the disease and its dire results. Dr. C. K. Clarke, Dean of the Medical Faculty in the University of Toronto, gives his views as follows:, "As Superintendent of the Rockwood Hospital for the Insane at Kingston, and later the Provincial Asylum in Toronto, I had an opportunity of studying the problem of insanity in its various phases. For the last four years it has been my privilege to conduct a Psychiatric Clinic at the Toronto General Hospital and to investigate through this avenue well over three thousand cases of mental deficiency and insanity. The latter study has revealed an alarming state of affairs. Our clinic records show, for example, that 51 per cent. of all cases of mental abnormality examined have come to us from countries outside of Canada. This fact alone demonstrates that no adequate means have been adopted at our ports of entry to prevent the feeble-minded and insane from entering the Dominion. Our studies in connexion with juvenile delinquency are enlightening. We have investigated twelve hundred and seven cases from the Toronto Juvenile Court who were mentally deficient. Of this number seventy-two set fire to buildings, one hundred and fifty-eight committed acts of bodily violence, six hundred and twenty-four were convicted of theft, two hundred and seventy-eight were guilty of acts of grave immorality. These cases are for the most part still at large in Toronto because of lack of accommodation in any State institutions for their care. I have been impressed by the close relationship that exists between the problem of venereal disease and mental deficiency. A mental examination has been made of several hundred prostitutes in Toronto, and 75 per cent. were found to be feeble-minded. We cannot hope to cope with the vexed problem of the spread of venereal disease unless defective immigrants are barred out of the country, and farm colony accommodation is provided for those living in the Dominion."

The committee expects to be of great assistance in dealing with the question of the mentally abnormal soldiers who have returned to civilian life, and high medical authority in the army has stated that much valuable help can be given. The need of wide popular education on these questions of mental importance, will also receive attention. It is of great importance that our medical men should have a clear understanding of the early symtoms of mental derangement, so that a specialist's care may be secured before the symptoms become too fixed. And in this connexion attention has been drawn to the great need for a wider psychiatric training to be included in every medical student's course just as thorough as that which he receives in surgery and clinical medicine.

These are some of the problems, far-reaching in their scope, which the Canadian National Committee are anxious to tackle, but their work can only be thoroughly effective through the co-operation of every intelligent person in our midst. Much of their effective work will be done by making surveys of institutions and organizations whose work involves these problems, and of securing statistics to present to the public to prove the need of reforms. Such surveys by trained workers can always be obtained without cost by writing to Dr. Clarence M. Hincks, secretary of the Canadian National Committee for Mental Hygiene, and it is hoped that full use will be made of this organization.

All honour to the men of science and to the philanthropists who have worked so efficiently together and who have given of their best in organizing and promoting this great national movement, among whom must not be forgotten, the man who unveiled his history to be so effectively used by them, and who mortgaged his own energies and means to the same noble end. The seed of this good work has taken strong root in the States and born good fruit. We hope to share in the harvest. But its results are still farther reaching than this. As a direct result of American effort through Dr. Salmon, medical director of the American National Committee for Mental Hygiene, there is a movement afoot in England to-day to establish just such a work over there. It is felt, too, that France is ready to follow closely on their lead, and enquiries have already been received from South Africa and Japan, where there is also thought of organizing a similar effort.

The task and aims of the Canadian Committee cannot be better expressed than in the words of Dr. Lewellys F. Barker, president of the American Committee: "The committee hopes

by investigation, by education, and by organization steadily to improve the brain-power of the nation. It is striving to hasten the time when our people will be so begot, and so reared, that their minds will develop normally and harmoniously; when society will have less need than now for sanatoria, asylums, and prisons; and when all but an irreducible minority of those born to membership in the nation may think, feel and act in a way that will make them desirable citizens of that Better State which is our goal."

Personnel of Committee

The Committee consists of about one hundred and twenty-five members, from among whom the office bearers have been elected, as follows:—

President, Lt.-Col. Charles F. Martin, M.D., Montreal; Vice-Presidents: Lord Shaughnessy, Montreal; Sir Vincent Meredith, Montreal; Sir Lomer Gouin, Quebec; Sir Robert Falconer, Toronto; and Sir William Peterson, Montreal; Treasurer (subject to his acceptance), Sir Edmund Osler, Toronto; Executive Committee: Lt.-Col. Colin K. Russel, Montreal, Chairman; Major J. D. Pagé, Quebec; Professor Dale, Montreal; Lt.-Col. Vincent Massey, Toronto; Dr. C. A. Porteous, Montreal; Dr. Peter Bryce, Ottawa; Dr. C. J. O. Hastings, Toronto; Dr. W. H. Hattie, Halifax; Professor Peter Sandiford, Toronto; and Lt.-Col. C. F. Martin; Medical Director, Dr. C. K. Clarke, Toronto; Associate Medical Director and Secretary, Dr. C. M. Hincks, Toronto; Board of Directors: Lord Shaughnessy, Lord Atholstan, Sir Vincent Meredith, Sir William Peterson, Hon. Smeaton White, Col. H. S. Birkett, Lt.-Col. C. F. Martin, Lt-Col. Colin K. Russel, Professor Dale, Miss Helen Reid, Dr. T. F. W. Burgess, and Dr. F. G. Devlin, all of Montreal; Sir Robert Falconer, Sir Edmund Osler, Lady Eaton, Lt. Col. Vincent Massey, Dr. C. K. Clarke, Mrs. D. A. Dunlop, Dr. C. J. O. Hastings, Mrs. H. D. Warren, Dr. Helen MacMurchy, Mrs. A. M. Huestis, Mr. W. D. Gwynne, and Mrs. J. B. Laidlaw, of Toronto; Sir Lomer Gouin Sir William Price and Mr. Frank W. Ross, of Quebec; Sir Augustus Nanton and Dr. Shorton, Winnipeg; Sir George Burn, Bishop Roper and Mr. C. A. Magrath, Ottawa; Lt.-Gov. Brett, Chief Justice Judge Harvey, E. F. Murphy and Mrs. Nellie McClung of Edmonton; Lt.-Gov. Hon. R. S. Lake and Hon. W. M. Martin, Premier of Saskatchewan, Mr. T. H. Wills of Hamilton.

Editorial

MEDICINE AND DEMOCRACY

THE address of President Morton of the Ontario Medical Association, published in this issue, is an admirable one in every respect. It presents a clear statement of the actual needs of the profession and the aspirations which should animate every member of it in the Dominion in general, and in Ontario in particular. No more apt and inspiring watchword could be urged on our profession than that of "*SERVICE*". The ideal which it represents is preëminently a product of the Christian era and has, for the medical profession, a peculiar and special significance at a time when every standard and aim of our Christian civilization is being challenged and assailed by a barbarian appeal to force. The whole address is conceived in a lofty spirit and can scarcely fail to stimulate everyone it reaches to greater zeal in the discharge of professional duty and all that implies.

The Hamilton men are to be commended for their courage in undertaking the bold project of a joint meeting of all the Medical Associations and those akin to them. The present, with its stress and strain, renders it peculiarly appropriate for the launching of such combined effort, not only to conserve energy, but also to make it possible to exercise a greater influence on the grave problems which confront us, by the increased force with which such influence can be brought to bear on them.

At no period of its history would it have been so possible to rouse the profession to the realization of the need of concentrated action in the interests of the public as well as of their own. It required a great national issue, such as is created by the menace now facing this, as well as all the nations of the world, to rouse the people generally to the

importance of the problems to be met and solved in the near future. Few, if any, difficulties will be more intricate than those to be dealt with by the medical profession.

In the past none of the Associations have spoken for more than a small proportion of the profession, so that their efforts were nullified to a great degree. An Association speaking for the country at large should carry such weight that its mature judgements on all problems affecting the physical well-being of the people should secure the support of an overwhelming public opinion. The real interests of the profession and public are identical. It will require much education of both profession and public to enable either of them to realize it. Had the profession realized its responsibilities and appreciated its privileges, the efficiency as well as the status of physicians in general would be better. They would have been the leaders of movements for combatting the spread of tuberculosis and the systematic and efficient care of those infected as they were in the case of typhoid fever, in place of permitting it to fall into the hands of laymen, who, however well-meaning, are, of necessity, incompetent to realize the intricacies and ramifications of the question. In regard to venereal diseases, they have given a good lead to the public in dealing with it. If the problem is to be effectively solved, the profession must stimulate the Canadian authorities to grapple with it in a manner in keeping with its importance to the life and health of the people as a whole. In the United States a large scheme is being evolved, embracing all societies available, to aid in the prosecution of the work. Can our officials not be prevailed upon to do likewise?

Of the questions to be solved there is none more important or difficult than that of Medical Education. Some of the strictures made on the matter in the Report of the Royal Commissions are quite just. None recognize the need for reform and improvement more than those engaged in carrying on the work in the Faculties in the several Uni-

versities. The solution of the difficulty cannot be reached by them alone, even though they give their undivided attention to the work of instruction and investigation, as at least a majority of them should be required to do. To be completely satisfactory, the education in the home, and in the primary and secondary schools must be greatly improved. The boys and girls must be taught that the ability to *observe*, to *reason* and to *apply the results of their thought* is of more importance than passing written examinations, success in which depends so largely on *memory*. This means that teachers must be better trained and better paid, and have fewer pupils for whose education, in the true sense of the term, they are responsible.

With the President's aspirations regarding post-graduate work we are in full accord. Many attempts have been made in the several Universities to establish such courses, but without success, as sufficient support was not accorded, even by those making request for them. In its broadest sense, post-graduate work begins at once with each after his or her graduation. Doubtless, insufficient emphasis has been laid by the instructors on the importance of the continuance of the methods in the wards in the work of daily life. It is by those who continue these methods that the need of post-graduate work in hospitals and laboratories is duly appreciated. If the officers of the various associations discussed this matter with those in charge of University work an understanding could, no doubt, be reached and a scheme of work evolved. Without effective aid from the practitioners themselves the professors and their associates can do little.

The President has indicated the problems and the aims; the insight and the energy of his associates in the organization of the combined meeting have provided the machinery and the leading for clear definition and appreciation of the difficulties and their solution. Great and good results will certainly be accomplished if the excellent work

done for this meeting is promptly and vigorously followed up by the profession throughout the country working in and through the local organizations.

ASSOCIATION OF AMERICAN PHYSICIANS

AN honour has been paid to Canadian medicine in the election of Dr. Alexander McPhedran as President of the Association of American Physicians. Membership in the Association may be regarded as the "blue ribbon" of medicine in North America. The membership is limited and the Association has always endeavoured to choose its members from those who are doing the best work in medicine. It has often shown an almost uncanny foresight in the election of younger men. It is a society in which "pull and influence" in attaining membership have been conspicuously absent. As Sir William Osler said in his Presidential Address in 1895: "In selecting members we *have* asked whether a man has done good work, rarely anything else, never whence he came."

Dr. McPhedran is the third member of the Canadian profession to be elected President of the Association; the late Dr. James Stewart and Dr. J. G. Adami of Montreal were the others. The Association has always recognized the Canadian profession generously and there are ten members—of a total of one hundred and fifty—who are resident in Canada. It is a coincidence that the two active members lost during the year—Theodore Janeway and John McCrae—died of the same disease and at the same age.

It is not necessary to speak of Dr. McPhedran's position in Canadian medicine. For many years he had been the head of the Department of Medicine in Toronto University and is recognized as a leader in the Canadian profession and as standing in the front rank of teachers. We may quote one of his former students who said: "I have listened

to many teachers of medicine both on this continent and abroad and have yet to hear one who is a better teacher of students than Dr. McPhedran." We extend congratulations to Dr. McPhedran on the honour which he has received.

CANADIAN NATIONAL COMMITTEE FOR MENTAL HYGIENE

IT will be gratifying to the medical profession to learn that there was organized in Ottawa, on April 26th, a Canadian National Committee for Mental Hygiene. Dr. C. K. Clarke, the Medical Director of the Committee, stated the aims of the new organization, which will deal with the vexed problems of crime, prostitution, pauperism, and unemployment; problems in which mental factors are of primary importance. It is hoped also that this organization will be able through its influence to be of assistance to the country in solving some of the difficult problems connected with the return to civil life of the mentally abnormal soldiers, as well as those raised by immigration.

Articles giving additional information of interest, contributed by Mrs. Colin K. Russel, a member of the National Committee, and Dr. C. A. Porteous, Assistant Superintendent of the Protestant Hospital for the Insane, are being published in this and the next issues of the JOURNAL.

There doubtless has never been a time when the problems of applied psychiatry have been so urgent to the nation. There never has been a time in which the nervous systems of individuals have been so tried, and never have we realized as now in this world struggle the practical importance of the social problem in hygiene, and the need of well organized consideration of all the factors that concern society.

In the case of the prospective recruit and of the returned soldier, the tests of mental deficiency have amply

revealed to how great an extent a proper application of the study of psychiatry is required in our state. The efficiency of the social service organizations, the industry of the child welfare organizations, and the far-reaching activities of the National Committee of Mental Hygiene in the United States, have already indicated how much can be done, and how much is *yet* to be accomplished.

The institution of a National Committee of Mental Hygiene for this country is a great need. Not only for its economic value, nor alone for its beneficial effects in the already established institutions for mental defectives, but most of all will its usefulness be felt in the education of intelligent people throughout the country as to the importance of this problem for the whole country. That millions of dollars are being uselessly spent and wasted in the custodian but unscientific care of the insane, is already admitted, but how little has been accomplished to improve these conditions needs yet to be demonstrated. Intelligent people need to be awakened to the fact that a great lethargy exists among the public on these questions, and it is to be hoped that the establishment of this national committee will have such far-reaching results that it will gradually gain increasing support from the States, the cities, and the prople individually.

The Canadian National Committee is to be congratulated in securing as members individuals prominent in medicine, law, education, finance, and social service. Credit for this splendid accomplishment is due not only to the secretary, Dr. Clarence M. Hincks of Toronto University whose perception of the national necessity, and indefatigable efiorts have done so much to co-ordinate the efforts of others, but also to Lieutenant-Colonel Colin K. Russel, M.D., Lieutenant-Colonel Chas. F. Martin, M.D., Major J. D. Pagé, M.D., Dr. Peter Bryce and Judge T. E. Murphy. Lieutenant-Colonel Russel, Montreal, consultant in neuro-psychiatry to the C.A.-M.C., has familiarized himself with those military problems in

which mental abnormality was a factor, and he believed that a National Mental Hygiene Committee could help the Army in this sphere. Colonel Russel prior to the War had advocated mental examination of school children. He had felt keenly the need of psychopathic departments in connexion with the general hospitals in Montreal, and had urged their establishment as well as the more thorough grounding of the medical student in this special study during his undergraduate course. Since the Committee endorsed progress along these lines, he gave it the benefit of his hearty support in Montreal with gratifying results. Major Pagé, respected and beloved by French and English alike in Quebec, has long been dissatisfied with the inadequate medical examination of immigrants. On the public platform he has time and again deplored the fact that through loose methods at our ports we have been allowing thousands of insane and feeble-minded aliens to enter the Dominion. On these and other grounds it was natural that Major Pagé should welcome the new organization, and was instrumental in securing the coöperation of the foremost citizens of his city.

We wish the Canadian National Committee all success. It is inspiring to see medical men and leaders in finance working together in such an important field of endeavour. The Committee will find much that needs to be done in Canada. Our existing state institutions for the care of the insane and feeble-minded are overcrowded and many who seek admission are turned away. We need additional hospitals for the insane, farm colonies for the feeble-minded and psychiatric departments attached to our general hospitals. Canada would do well to build and equip several institutions similar to the Phipps Institute at Baltimore where research in connexion with mental diseases could be carried on. Our knowledge concerning many of the psychoses is indeed meagre, and if we would prevent mental breakdowns, if we would check early cases of dementia præcox for example, then more time and thought must be given by the medical

profession to psychiatry, and the interest of intelligent men and women must be directed to the conservation of the mental health of the race by developing the qualities of foresight and judgement. The Canadian National Committee for Mental Hygiene can do much in a field too long neglected.

THE ADMISSION OF WOMEN TO THE STUDY OF MEDICINE AND ALLIED SUBJECTS AT McGILL UNIVERSITY

ON Friday, May 10th, the Corporation of McGill University admitted women to the study of medicine by adopting in full the following resolution which had been sent forward from the Medical Faculty: "That the Faculty recommend to Corporation that women be admitted to the study of medicine provided they had taken a degree in Arts from a recognized University; or that they take the double course of B.A. and M.D., or B.Sc. and M.D. at McGill University; or that they have completed the first and second year in the Faculty of Arts at McGill University, and thus give evidence that they are sufficiently mature and otherwise qualified to take up the study of the professional branches. The Faculty further recommends that inasmuch as in certain subjects, separate laboratory accommodation and equipment are highly desirable, a strong appeal be made for some addition to the available funds of the Medical Faculty."

At the same meeting of Corporation a letter was presented from two Montreal nurses asking that provision be considered for a University course of Nursing Instruction for graduate nurses, along lines similar to those followed in Columbia University, New York, and pointing out that nurses are now forced to go to the United States to obtain these advantages. This suggestion was received with sympathy by the McGill Corporation, and we understand that the matter has since been taken up by the Medical Faculty, and that

provision for courses of instruction for nurses in anatomy, physiology, and materia medica for next session, is now under consideration, other courses being left to the hospitals to provide, so that the immediate future is likely to see a Teachers' College for Nurses at McGill an established fact.

A new department for Social Service and School for Physical Training for *masseuses* have also been inaugurated recently at McGill as stated below. Thus, within a few weeks, a professional training in medicine and in at least two, in all probability three, of its ancillary sciences has been provided for women, and the doors of the most conservative of Canada's great universities are now thrown open without distinction of sex.

This event is the logical outcome of the entrance of women into the Arts Faculty, and the University has been slowly broadening her phylacteries to meet the needs of her women students and graduates. It is just thirty years ago this spring since the first class of women graduated in Arts from McGill. It is a far cry now from the days of Florence Nightingale, seventy-five years ago, and the mid-Victorian standards of her time, when the only possible sphere of women's work was asserted to be the home, The advance has been slow. The splendid work, however, done by women towards the winning of the War is at present in every eye, and has undoubtedly been the most important element of all in the change of thought that has carried woman and her work so rapidly into the van, and given her usefulness and recognition. In the organized application of our Red Cross industries, the productiveness of the British Ammunition factories, the splendid achievements of the Scottish Women's Hospitals in Serbia and France, in the good work accomplished by the *chauffeurines* of the Western Front, and last but not least, in the clear-sighted administration of our Canadian Patriotic Fund itself, are presented evidence incontestable of the value of the services that a woman has to render to her country as well as to her home. The hearty

appreciation of the value of these services has been shown in many ways, but one of the most striking is certainly the throwing open, within the last two years, of the doors of medicine in practically all the great universities of this continent, Pennsylvania, Chicago, Columbia, Winnipeg, McGill, Yale, and others following the example set by the Johns Hopkins Hospital, Toronto, Michigan, and Cornell.

The educational restriction placed upon women entering the study of medicine at McGill to the effect that they must have a B.A. degree or two years in Arts at that university, may seem a hardship, but in them is to be clearly read the desire of the Faculty to secure a class of mature students who will do high honour to the profession of which they are made free. The profession will look for great accomplishments from its women graduates.

THE REPORT OF THE COMMISSION UPON MEDICAL EDUCATION IN ONTARIO.

THE report of the Royal Commissioner on medical education is at last available for the inspection of the favoured few. The government has not thought fit, for the present, to print it, although promises are held out indicating that in the near future it will be made public. The osteopaths who have seen it seem dissatisfied, the chiropracters are more than dissatisfied, and the Christian scientists find it anything but satisfactory; however, if Christian Science is a condition of mind, why should they worry. Undoubtedly the Commissioner, who appears to have discovered that the subject of medical education is somewhat complicated, even for the legal mind, has produced a report that does him credit. It is an admirable report to be made by a layman, and the Commissioner may be thankful that he has been given a free hand in steering his bark past the Scylla of the "regular" physician on the one hand, and the Charybdis of the quack on the other. At first reading it appeared as if he were try-

ing to appease the righteous wrath of the osteopath by advocating far greater attention to physical therapy than has been given in the past, but a careful reading of the report makes it clear that he has the treatment of the returned soldier in mind. To a certain extent his contention is correct, although he probably overestimates the benefits likely to result from extensive training along these lines. Those who know how the Zander room fad has fallen into disrepute will understand what is meant by the above statement.

There is little comfort for the Ontario Medical Council, and the Judge has put his finger on the weak points very deftly and yet upholds the right of the Council to exist, as was inevitable. The suggestions regarding the reduction in the number of the members is what all sensible men believe to be correct, and the remarks about the financial standing of the Council must prove unpleasant reading to those of that body who have regarded the Council as existing to help them to enjoy life at the expense of the poor student. The suggestion that an unjustified surplus be handed over to the Provincial University to enable it to forward medical education, has a touch of humour in it that was unsuspected by those who saw the stern-faced Commissioner at work, and yet the suggestion is not without point. The Medical Council would do wisely to reorganize itself before it is forced by the Legislature to do so.

The Commissioner, wisely, no doubt, is not inclined to allow the Universities to grant a license to practise without some sort of supervision by the Council. While the Provincial University should, at least theoretically, have this right, at the same time no end of trouble would result if one institution alone received this privilege. Under the circumstances the University of Toronto is little likely to protest, as the Commissioner pays high tribute to its organization and efficiency.

The Commissioner in his report touches the inconsistencies of the profession at various points, just as the medical

profession might do in the case of law, if it were given the opportunity; at the same time there is a great deal of truth in much of his criticism.

Now that the report is on the table, the question naturally arises, what is the Government going to do about it? let the document find its way into a pigeon hole, or blossom forth into sensible legislation that will put the unmitigated quack in the place he rightly should occupy and so keep medicine on the level to which it belongs, or throw a sop to the bogus scientists whose ignorance has always threatened the safety of the public?

On the whole, the Commissioner has done wonderfully well, and has produced a document that will be of intense interest to all who are honestly anxious to see medical education in Ontario kept on the highest plane possible.

SOCIAL SERVICE DEPARTMENT AT McGILL.

McGILL University has taken a forward step of the utmost importance in founding a Department of Social Service which will begin work next session. The new department is designed to give leadership and training of university standing in the various branches of the new profession of expert social service. Montreal employs a rapidly increasing number of social workers, but gets them almost entirely from the States. But the majority of the students will be men and women already interested in social work, who look forward to taking part as volunteers or leaders of opinion in some phase of reconstruction.

The Department will devote itself to the study of our social and municipal problems, and should bring the powerful aid of knowledge and experience to the help of the professional and general public. The time is very ripe for a closer integration of the forces that make for social welfare, and that is what McGill hopes the new department

may help to achieve. The Director will be a university man who had business experience prior to his ten years social work in Winnipeg, will bring to it a wide outlook and executive energy and ability. The lectures and classes will be conducted partly in the university by the regular staff, and partly in the field of social work in the institutions of the city. In this regard a hearty coöperation is already assured.

The McGill Graduates Society are making the adequate development of the Social Service Department the object of their special efforts in the immediate future as stated in the announcement published on page 560 of this issue. It is to be hoped that this most laudable undertaking will receive the support that is its due.

Among the various kinds of war service performed by the Universities, one interesting form is the institution of a course of training for masseuses by the School of Physical Education at McGill. The School had already a course in corrective gymnastics as part of its training for physical instructors; for it has always held that the physical instruction of school children must be based on the bearing of exercise on the normal physiology, anatomy and hygiene, and of the most common abnormalities, of growing children. But, on the outbreak of the war the Committee, foreseeing the need, started a full-time eight months course for the training of masseuses.

The year 1915-1916 was spent by the physical director in the war camps and hospitals of England as a member of the Almeric Paget Massage Corps. When she had thus added to her previous training the advantages of a varied experience of the military needs (including five months charge of the remedial work at Rhyl Convalescent Camp) the massage course was extended. It now includes as its main subjects a thorough grounding in anatomy, physiology and hygiene, with the practice and theory of massage and re-

medial gymnastics, and the various forms of physio-therapy. From the first the university authorities and staff, and the hospitals have given hearty coöperation; the clinical facilities have been excellent.

As was expected in founding the course, the majority of the graduates are engaged in military work. One is in charge of the massage department at the Drummond Street Home, and one is on the staff of the Almeric Paget Corps in England. All this year's class of nine have been asked to join the staff of the C.A.M.C. either as demonstrators or masseuses. But the Committee looks forward to the training of masseuses as a permanent contribution of the School to medical service. It is setting a high standard and is working for a registration which shall help to make massage a recognized profession for educated women. In this purpose it looks with confidence for the coöperation of the medical profession.

ANNOUNCEMENT

SPECIAL ANNOUNCEMENT FROM MCGILL GRADUATES' SOCIETY *re* DEPARTMENT OF SOCIAL SERVICE

In the first year of the War the graduates society of McGill University, which had rested in a comatose condition for some years, was revived in connexion with a movement which aimed at maintaining a stable and well informed public opinion in Canada on the subject of the War. This movement later took the form of assisting to raise and in equipping University companies which were authorized and welcomed by the Militia Department, and which afterwards acquitted themselves in such a manner as to become a source of gratification and pride to all McGill graduates. While the military work is still carrying on it is now proposed by the executive body of the society to prepare such a programme for its members to follow as will embrace the best interests of the University itself and at the same time keep before the graduates of all faculties that older and wider conception of citizenship and its relation to the humanities with which the Alma Mater inspired them in days gone by. While the committee were de-

liberating as to the best method of accomplishing this, a message was received from the Principal of McGill University to the effect that the coöperation of all McGill graduates would be welcome in connexion with the support and development of a Chair for Social Service in that newly formed department at McGill. In the last report of the University it is intimated that the study of social problems can only be successfully faced by those who have the capacity for intelligently understanding at one and the same time academic methods and industrial life. Here is an opportunity for the graduates in all faculties and of the Medical Faculty in particular to improve existing methods of applying the laws which ought to govern the arrangements for health, for town planning and housing, education, public recreation, and civic administration. With this programme a very full general meeting of McGill graduates is looked for on Thursday evening, June 13th, at the Royal Victoria College, Montreal. Professor Dale and Miss Reid, of the Patriotic Fund, will address the meeting.

(Signed) MARY H. SHEARWOOD,

Vice-President McGill Graduates' Society.

DR. H. B. ROGERS has just been appointed resident medical superintendent of the Jubilee Hospital. Dr. Rogers was house surgeon at Chemainus Hospital for several years, and subsequently entered into private practice in Victoria. At the outbreak of the war he went overseas and has been engaged at one of the big base hospitals in France until quite recently.

The secretary was instructed to send letters of condolence to two members of the board, lately deceased, Mr. A. Wilson and Mr. Richard Hall, and also to the family of the late Dr. Oswald Meredith Jones. It was further decided that portraits of Dr. Jones and Mr. Wilson should be secured and hung in the hospital.

The institution is in great need of an intern doctor. The young men, as soon as they graduate from the medical schools, are immediately requisitioned for military purposes. The hospital decided to make application through the military authorities for such a graduate to take the place of Dr. Black who had just been appointed to St. Joseph's Hospital.

Obituary

DR. JOHN W. ANDERSON

VERY keen regret was felt on the death of John W. Anderson, the late house surgeon of Victoria Hospital, Halifax. A career of great promise has suddenly terminated and it is a severe blow not only to his relatives and immediate friends but to hundreds who knew him and held him in the highest esteem. He was born in Heart's Content, Newfoundland, twenty-eight years ago. He began his medical course at Dalhousie University where he was a great favourite with all his fellow students who quickly recognized his mental abilities; he was also one of the most popular athletes in the college. During his last summer vacation he was appointed house surgeon of Victoria Hospital and at the special request of the medical board he remained in office. He was to go up for his finals in May, these examinations having been delayed by the disaster in the Nova Scotian capital. As soon as they were over he intended to join the R.A.M.C. This would have been the culmination of his dearest hopes, for only the most urgent representations on many occasions had prevented him throwing up his medical course to enlist in one of the many Nova Scotian drafts going overseas. He was the brother of Dr. Anderson of St. Johns and the son of a physician who lost his life in a blizzard in Newfoundland.

The young surgeon was ill of pneumonia only one week when he passed away. The fact that he had contracted diphtheria, while on duty in the medical wards, last December, is believed to be the cause of his succumbing so quickly to the attack which terminated fatally. The deepest sympathy is extended to his aged mother who survives him, and on whom the blow falls most heavily. The funeral service, held hurriedly prior to the sailing of the Newfoundland steamer, was attended by President Mackenzie, representatives of the Senate, of the Faculty of Medicine, of the staff of the Victoria General Hospital and the students of the University.

Dr. C. J. Kelly, who practised in Hamilton chiefly as *x*-ray specialist for many years, died in Arizona, December 29th, 1917. He had been in poor health for over two years. He graduated from the medical school at McGill University in 1891.

Miscellany

News

MARITIME PROVINCES

THE Halifax Medical Society held its annual meeting on April 24th. The president, Professor John Cameron, D.Sc., of the chair of anatomy, was in the chair. The president was reëlected for the ensuing year. Dr. Mader was elected vice-president. The secretary-treasurer, Dr. Hugo Schwartz, was reëlected. The executive council was elected as follows: Dr. M. S. Dickson, Dartmouth; Dr. A. C. Hawkins; Dr. Frank Mock; Dr. F. G. Macdougall and Dr. George K. Murphy. The meeting congratulated Dr. Hawkins who had that day just been elected Mayor of Halifax.

THE Public Health Officer of the Provincial Department, Nova Scotia, has just issued his report for 1916. In an estimated provincial population of 507,880, there was a general death rate of 15·8, an infant death rate of 121·6. The general death rate of the cities and towns was 17·6 and infant death rate 164·8. In the rural districts the general death rate was 14·6 and infant death rate 84·1. The year 1916 was the most unsatisfactory they had had for some time the medical officer said. The death rate from respiratory conditions generally was unusually high; there was a sharp recrudescence in death rate from pulmonary tuberculosis; pneumonia claimed an unusually large number of victims also, and measles caused no less than 241 deaths as compared with an average of 46 in the seven previous years for which they had statistics. At the time the report was prepared the vital statistics for 1917 were not available, but the indications are that it will substantially better the year reported on. The death rate from pulmonary tuberculosis will be much lower than in the preceding year. The morbidity returns, which have been summed up for the year 1916–17 (up to September 30th) show a most gratifying improvement over 1915–16. The number of cases of typhoid fever and of scarlet fever reported have, in each instance, been about 35 per cent. less than in the previous year.

A WIDE spread epidemic of smallpox had been threatened, but

the disease had been, in the main, of a mild type and had caused but one fatality. Altogether forty-nine cases were reported in the province. On the other hand, the fact that the disease had been reported from fifteen localities in eleven counties indicated that no community in the province could be free from the menace of infection, and the report strongly urged that the simple and efficacious preventive measure of vaccination should be universally adopted. The Halifax death rate was the highest of any city or town in the province, but the infant death rate was lower than that of some other localities.

THE New Brunswick Legislature has passed the Public Health Act, introduced by the Hon. Dr. Roberts, after much debate and the elimination of certain features of the bill. The principle of the bill was, as explained by Dr. Roberts, to prevent existence and spread of disease. To protect others from persons infected with dangerous diseases. To bring about conditions resulting in the reduction of the death rate of children and others from preventable diseases. Provision of hospital and clinical treatment along most modern lines. To increase the value of life by lengthening it and remove retarding weaknesses. To remove or remedy unhealthy conditions, localities, nuisances. The education of individuals in hygiene and personal care. To study diseases, causes and treatment. To keep accurate records of vital statistics. To insure pure food and water supplies.

The means proposed to make the bill effective were: A government department with a responsible minister. A technical staff having an oversight over the operation of the act throughout the entire province. A division of the province into districts, with a health officer supervising the work in each district. A sub-district board of health responsible for the carrying out of the legislation. Powers given to the department to compel the obedience to the law or the fulfilment of duties. All births, marriages and deaths to be promptly registered with the District Medical Health Officer.

THE Women's Institute of Fredericton has asked the city council to appoint a woman as bread inspector and recommended Miss Jean Cooper for the position.

THE annual graduation exercises of Prince Edward Island Hospital took place on April 26th. Seven nurses graduated and the diplomas were presented by Mr. Justice Haszard. Mr. Pope

on behalf of the trustees extended to the recipients their heartiest congratulations. He referred to the grand work accomplished by the Prince Edward Island Hospital, and said that though the institution was somewhat in arrears, the equipment was never in better condition. The trustees are organizing a systematic appeal throughout all the rural sections of Queens and Kings counties for the hospital. This institution serves at least 6,000 families. The report of Falconwood Hospital and the Provincial Infirmary is a most satisfactory one from the point of view of efficiency, care of patients and successful management of the farm in connexion with the hospital. The expenditure on maintenance during the year 1917 amounted to $88,466.26. At the close of the year there were 276 patients in the hospital; 91 in the infirmary and 8 in the tubercular cottage.

SEVEN cases of smallpox were reported in Sydney and three in St. John's, Newfoundland, in the beginning of the month of April.

ONTARIO

SCARLET fever in the province of Ontario is about on a par for April with the three previous months of this year. The Provincial Board of Health statistics show 1,416 cases and thirty-six deaths. Smallpox shows a material reduction, the figures being: January, seventy-nine cases; February, ninety-one; March, forty-seven; April, thirty-nine. Diphtheria dropped from three hundred and ninety-four cases and thirty-two deaths in January last to two hundred and forty-two cases and twenty-two deaths in April. The decrease is attributed to the free distribution of antitoxin at a cost of $1,280. Measles and whooping cough showed a decided increase.

THERE are seven health districts in the province, each being under the supervision of a medical officer who has undergone special training for that purpose. A special sanitary officer is appointed who has charge of the sanitary conditions in the lumber camps, the mines and railway construction camps. All water and sewage works must be approved of by the provincial board before they are established.

IN Toronto, Kingston and London are maintained fully

equipped laboratories, where samples of water, sewage, milk, meat, etc., are examined. Diagnostic reports on diphtheria, tuberculosis, typhoid, paratyphoid fevers and venereal diseases are issued to medical practitioners of the province. For the prevention of the spread of such diseases as anthrax and rabies from the lower animals to man, facilities are provided. All these services are free of charge.

THE local provincial boards of health have supplied the medical officers and hospitals, free of charge, with smallpox, typhoid and paratyphoid and whooping cough vaccines, antimeningitis serum, diphtheria and tetanus antitoxins, silver nitrate for the prevention of babies' sore eyes, and Pasteur preventive treatment for rabies. Recognizing the great opportunities for preventing typhoid fever in the Canadian army, the provincial board has supplied, free of cost, all the vaccine used for this purpose. Thus the Department of Militia and Defence have been relieved of an expense of $150,000 to $260,000. There is a practical laboratory instituted for research work in sewage, water and other health utilities. This plant is said by impartial critics to excel any experimental plant of the kind in America. The students of Toronto University are, by special arrangement, given a course of sanitary engineering in this laboratory.

THE Llewellyn Maternity Hospital was formally opened on April 24th by Inspector of Hospitals, Dr. Helen McMurchy. This beautiful institution was donated to the town of Oshawa by three companies, the McLaughlin Carriage Company, the McLaughlin Motor Car Company and the Chevrolet Motor Company of Canada, all of which are under the control of the McLaughlin family. The ladies of the hospital auxiliary have furnished it so far without any expense to the hospital board. The people of Oshawa have contributed generously and many small gifts as well as large ones testify to the widespread interest in the undertaking. Dr. McMurchy, in her excellent address at the formal opening, scored a point when she said: "The baby was the nation," and was glad that the people of Oshawa would have such a beautiful place to be born in.

ABOUT three hundred delegates, who attended the conference on education held recently in Toronto, attended a meeting in Convocation Hall to discuss the problem of combatting social diseases,

a number of prominent social service workers taking part. Sir Robert Falconer presided. Dr. Clarke, of the General Hospital, and Dr. Gordon Bates gave figures which showed the alarming spread of these diseases. Dr. Clarke asserted that 14,000 cases of syphilis alone visited the hospital clinics for treatment. A startling fact was revealed in the fact that even children of one and a half years had received treatment. About 10 per cent. of public ward patients had venereal disease and did not know it. Dr. Bates stated that about ten per cent. of the troops in the district were infected, but this proportion was no greater than among civilians.

QUEBEC

THE Ottawa Maternity Hospital, which coöperates with the three city hospitals in their courses in obstetrics, has a gratifying record. So efficient is the nursing staff attached to the hospital that during the last fiscal year there was not a single maternal death. The present building is too small to cope with the designed scheme of usefulness and the management are planning a public appeal to the citizens to supply this most urgent need of conserving infant life at the most critical period of the world's history.

DR. LAW, medical health officer, has found it necessary to announce, in view of the persistent rumours that have been in circulation with regard to spinal meningitis having developed a considerable number of cases that there was not a single case of the disease in Ottawa. The board of health has decided to take strong measures to arrest the growth of infant mortality in Ottawa. Prosecutions will follow failure to report births within forty-eight hours. Physicians also are required by law to report cases of contagious diseases within forty-eight hours after the case has been determined. The board also decided to instruct the milk station nurses to secure from the Roman Catholic parishes in the city, twice a week, the baptismal registrations.

THE government has under consideration the increase of the amount to be paid to animals slaughtered under the operation of the Animal Contagion Disease Act, and a bill to this effect is to be put through the present session of parliament. To this measure an amendment is urgently needed. A prominent breeder of pure bred cattle recently discovered tuberculosis in his herd; the herd

had been built up at great cost and much painstaking effort. He reported to the Dominion authorities and this is his position. He cannot sell milk from the herds; he can not sell animals from the herd to the packing plants, he will get no compensation from the government if he kills the diseased animals, but—he is entirely free to sell these animals to other farmers for breeding purposes and thus scatter infection all over the county. Since the object is to kill out contagious diseases, how does parliament deal with the object in view?

MRS. HANNINGTON, general superintendent of the Victoria Order of Nurses, speaking of the serious farming difficulties prevalent in the West, said the V. O. N. is about to start a big campaign to send nurses out there to save mother and child life. "The mothers may be foreign but the babies are ours," was her very pertinent remark. Four training schools have been established where graduate nurses may take the course of Public Health Nursing, and a plan is on foot to enable a nurse to combine this four months' course with that of her regular training in the last year of her course in the hospital. All the machinery is available, all that is needed is the coöperation of the training schools and the support of the Union government. About forty graduates of the Lady Stanley Institute have answered the call to overseas duty.

SIR JAMES GRANT, of Ottawa, is the only living member of the original Medical Council of Ontario of 1866, and has been present at almost every meeting during the past fifty-one years. Sir James is also the only living member of the Confederation Parliament of 1867.

DR. C. R. PAQUIN, the health officer of Quebec, has just issued a very instructive and far-reaching report for 1917, to which a number of others in the public service have also contributed. Much attention has been devoted to the inspection of milk, the sanitary service, the prevention of tuberculosis, inspection of cows, stables, etc., inspection of schools and hospitals. The analysis of the city water and methods used for its purification is comprehensively dealth with. The total number of patients admitted during the year to the Civic Hospital were one hundred and seventy, of these one hundred and sixty-three were cured and seven died. The number of contagious diseases for the year reported to the health officer were five hundred and twenty-nine. The infant

mortality shows a splendid decrease from 1916, when the total number of deaths were 1,421. In 1917 the total number of deaths were 1,070. The city is to be congratulated on the saving of three hundred and fifty-one lives, which is attributed to the enforcement of the milk regulations.

MANITOBA

THE city health authorities are alarmed at the rapid depletion of cattle herds that supply Winnipeg with milk. The herd of cattle that has provided the General Hospital with milk for eight years was sold for approximately $15,000. The board will call for tenders at once for a new supply. The authorities are determined to take drastic measures to protect the general supply and avert a milk famine.

THE annual report of the Winnipeg General Hospital was one of the most encouraging in years. It gave a detailed account of the year's activities embracing the financial statement. This was especially favourable, in view of the extraordinary difficulties the board had encountered in the endeavour not to exceed the current revenue. A grant of $60,000 from the city was made payable in two installments. The total revenue was $417,292; the expense of operating and maintaining $476,507, leaving a deficit of $59,215. The erection of a new psycopathic building will be undertaken, for which the provincial government has made a grant of $50,000. The number of operations in the *x*-ray and hydrotherapeutic department for the year were 22,130, and general operations, 4,387.

SASKATCHEWAN

THE consulting engineer of the Department of Public Health, J. H. Puntin, has recently met the School Board, Regina, in reference to the probable installation of a septic tank to dispose of the city waste.

THE department of agriculture has discovered in one or two sections of the province a very obvious attempt to deter farmers from using formaldehyde on their grain seed this season, thus lessening production and making certain the growing of smutty grain. Rumours were prevalent that German sympathizers had tampered with the supply of formaldehyde for Saskatchewan. The officials of the department at once made a thorough investigation.

The test was made by Dr. G. A. Charlton, provincial analyst, and as a result of the analysis, Dr. Charlton has reported to the department that the formaldehyde is perfectly normal. Professor H. L. Bolley was also instructed by the department to make a test, and he was of precisely of the same opinion as Dr. Charlton. E. A. Lloyd, B.S.A., of the University of Saskatchewan, left immediately to visit districts from whence the rumours have come, to assure the farmers they have nothing to lose but everything to gain by the extensive use of formaldehyde.

ALBERTA

THE University of Alberta is giving special classes of instruction to the provincial public health nurses, upon whom, to a considerable extent, rests the development of the health policy. Later on they will take a thorough course in medical inspection in schools which may be taken in the Calgary schools in connexion with the Calgary school medical staff. The Calgary medical inspection is regarded as the most complete of any in the Dominion of Canada. A health exhibit will be put on at the Exhibition which will largely consist of moving picture films.

BRITISH COLUMBIA

THE sixth annual meeting of the Graduate Nurses' Association of British Columbia was held on April 2nd, at the Royal Jubilee Hospital. The president, Miss Randall of Vancouver, delivered her annual address. Dean Quainton delivered the invocation. The most important matter brought up was the introduction at the present session of the Provincial Legislature of the Nurses' Registration Bill. The Hon. Dr. MacLean, Minister of Education, is to introduce the bill as a government measure. Most important among the reports was that of the Committee on the organization of a league for National Service. The affiliation of the Canadian National Association of Trained Nurses with the Canadian Red Cross was strongly urged. A resolution was adopted by the meeting that "The Graduate Nurses' Association of British Columbia ask the Provincial Government to make provision for the mentally defective and delinquent children in our province, also for the care of the aged men and women who are not able to care for themselves."

ARMY MEDICAL SERVICES

PROMOTIONS in the Canadian Army Medical Service: Colonel J. A. Roberts is appointed deputy director of medicals, and Lieut.-Col. C. H. Dickson, assistant director of medicals, Captain F. B. Woodbury is appointed deputy assistant director of medicals. Surgeon-General G. B. Foster is gazetted a major-general.

MAJOR J. W. MCINTOSH, M.P.P., a member of the British Columbia Legislature, has been placed in charge of the medical work at No. 2 Canadian Hospital in France. Previous to his appointment he had been a member of the Military Medical Board in London, England, and had been engaged in the military hospitals, but on account of his work as a specialist in diagnosis and internal medicine he received his promotion.

DR. A. M. WARNER, of Vancouver, has been mentioned in the despatches from East Africa for meritorious service in the field. Captain Warner gave up his practice early in 1916 to join the R.A.M.C. He was sent out to German East Africa and shortly after the capture of Dar Es Salaam was given command of the Blue Carrier Hospital. This he built and organized, under great difficulties, into a 1,200 bed hospital.

AT the presentation of decorations in Toronto lately, by the Duke of Devonshire, Dr. McEwan, of the 44th Battalion, received the Russian Cross of St. George. Dr. G. B. Carbert received the Military Cross which had been won by his son, Captain M. Carbert, formerly of the 20th Battalion.

THE Distinguished Conduct Medal has been awarded to Sergeant J. Turner, who led stretcher bearers under fire with total disregard to personal danger, earning the admiration of all who came in contact with him.

THE Military Cross has been awarded to R. S. M. A. P. Disley, C.A.M.C.

PRIVATE HARRY BROWN, C.A.M.C., had the distinction of being one among the honoured dead whose names were recently tabled in the House of Commons on Canada's roll of V.C.'s.

NURSING SISTER WILSON (the wife of Major Cameron Wilson, C.A.M.C.), has been awarded the Royal Red Cross.

DR. BRUCE, of Toronto, now with the Imperial Medical Service in France, will be a member of the important British commission that is shortly to visit the United States. It is composed of three prominent surgeons who will attend the National Medical Association at Chicago and other gatherings. Dr. Bruce will represent the body with which he is serving at the front.

DR. ROBERT J. MCFALL will immediately take up the duties of commissioner investigating the high cost of living, in succession to W. F. O'Connor, who has resigned. Dr. McFall is a Nova Scotian. He studied at Glasgow University and Columbia University, taking his doctor's degree in economics at the latter institution.

MAJOR A. MACKAY, M.D., of Toronto, has been appointed Inspector of Prisons and Asylums, and Inspector of Institutions receiving aid under the Hospital and Charitable Institutions Act. Major Mackay was formerly in charge of the medical inspection of the public schools in Toronto.

THE Military Hospitals Commission Command ceases to exist, as the Depot Unit, under the command of Colonel La Fleche, takes charge of all returned soldiers. Colonel La Fleche will have no connexion with the military hospitals, which are to be conducted by the Army Medical Corps.

ALREADY between sixty and seventy medical students of Toronto University have applied for entry to the R.N.V.R. as surgeon probationers. The naval secretary, J. R. Hemsted, has sent out instructions regarding the course of procedure. Forms of application will be forwarded to those who apply in writing.

A TRIBUTE was recently paid to the Canadian and Australian medical authorities, by the British War Office, for generously lending medical officers and nurses. In the late retirement along the Western front a certain number of medical units, such as casualty clearing stations, fell into the hands of the enemy. All the medical and nursing personnel of these units and the patients were safely evacuated, but it was inevitable that in the process of evacuation a number of casualties occurred as the units had to be cleared out at short notice under, in many cases, a heavy fire. The War Office announcement concludes with praise for the un-

selfish devotion and disregard of personal safety shown by all the medical and nursing personnel, and special reference was made to the exemplary work of the stretcher bearers and ambulance drivers. The equipment was replaced immediately and a large reserve of supplies sent to France. The prompt assistance of the Canadian and Australian authorities was greatly appreciated.

LIEUT.-COL. CHARLES H. GILMOUR arrived in Toronto from overseas recently. He went to England with the 1st Contingent as a major in the C.A.M.C., and was sent out to No. 2 General Hospital, France. After seeing considerable service, he was recalled to England for duty in military hospitals. He was later attached as chief surgeon at Bramshott Military Hospital, to the Duchess of Connaught Canadian Red Cross Hospital at Taplow, and had command of the hospital for Canadian officers at Broadstairs, on the Kentish coast. For the last eight months he was chief of the surgical service at the Ontario Military Hospital, Orpington. Lieut.-Col. Gilmour graduated in medicine from the University of Toronto in 1903, and afterwards practised in Toronto, where he was on the surgical staff of Grace Hospital.

LIEUT.-COL. FRASER, M.D., has returned from the war zone. The doctor was one of the "Original Firsts" to enlist in his district on the opening of the war. He went as a captain in the A.M.C. and has received the D.S.O. for courage in the field in attending to the wounded while under fire. He has been continuously on the fighting line for three years and has well earned his short furlough.

CAPTAIN C. WALKER, M.D., of Toronto, has returned from overseas. Early in 1916 he joined the R.A.M.C. and was attached to Devonport Military Hospital, England, He went to France in charge of the 61st Field Ambulance Corps. He was some time in hospital with a broken arm, the result of a fall from his horse, and on returning to duty was attached to Winchester Hospital in England. In the fall of 1917 he again returned to France in charge of an ambulance train conveying wounded from the front line to base.

ANOTHER Toronto University man has returned on leave, Major William C. Laidlaw, an M.B. of '95. He went through the South African campaign in which he won the D.C.M., and again

offered himself for service in 1914. He was made O.C. of the Sanitary Section of the 1st Division, and quite recently appointed Deputy Director of Medical Services at the Canadian Army Corps Headquarters in France under General Currie.

Book Reviews

AN INTERNATIONAL SYSTEM OF OPHTHALMIC PRACTICE. Edited by WALTER L. PYLE, A.M., M.D. MEDICAL OPHTHALMOLOGY. BY ARNOLD KNAPP, M.D., professor of ophthalmology, Columbia University. 480 pages, with 32 illustrations. Price $4.00 net. Publishers: P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1918.

IF proof were needed, one would find in a work of this kind irrefutable evidence of the indissoluble relationship between ophthalmology and general medicine; for a work on medical ophthalmology is essentially a compendium of general medicine with special reference to eye changes.

As one would expect, Knapp has done his work in a thorough and acceptable manner; and, while a treatise of this kind must of necessity be of the nature of a compilation, it yet bears the impress of the author's clinical assiduity in fields rich in material. The subject has been brought thoroughly up to date; and the form in which the work is presented (convenient size, leaded lines of clear large type, and arrestive paragraph headings), adopted at the outset by Pyle for the numbers of this system, adds to the ease with which one reads the book. An illustrated introductory chapter on ophthalmic anatomy, and more especially the anatomy of the nervous system connected with sight, is a commendable and helpful feature.

We have read this work of Knapp's with great interest and pleasure, and would cordially recommend it as worthy of careful perusal by specialist and by practitioner alike.

Canadian Literature

ORIGINAL CONTRIBUTIONS

The Public Health Journal, March, 1918:

The work of the psychiatric clinic of the Toronto General Hospital . . . C. K. Clarke.
The problem of the feeble-minded . . Marjorie Keys.
Mentally deficient children . . . C. M. Hincks.
Psychology and public health . . . W. G. Smith.
Mentally deficient recruits for Army service. Capt. O. C. J. Withrow.

Canadian Practitioner and Review, March, 1918:

Some clinical forms of infantile paralysis . F. T. Green.
The obstetric forceps versus drugs . . . J. Hunter.

Canadian Practitioner and Review, April, 1918:

Vocational training . . . . . J. Roddick Byers.

The Canadian Journal of Medicine and Surgery, April, 1918:

Cancer of the large bowel . . . George E. Armstrong.

Medical Societies

No. 1 CANADIAN GENERAL HOSPITAL CLINICAL SOCIETY

Meeting December 6th, 1917

Lungs taken from Cases of Gas Poisoning. Demonstrated by Major Ower.

The general features were the intense œdema of the trachea and upper bronchi, with secondary broncho-pneumonia. One of these cases showed a false membrane of the larynx. Major Gwyn made some remarks on the treatment of the cases in the light of these specimens. The treatment by injection of calcium chloride,

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which had been recommended when this case was first employed, had been clearly proved to be futile, if not dangerous, for in some cases local abscesses had been formed at the point of injection. Bleeding also he considered to be a useless measure. He concluded that the only measures which seemed to be of the slightest value were palliative. Warmth and soothing inhalations he had found very useful. He drew attention to the hopelessness of trying to reach the intensely engorged and inflamed mucous membranes of the throat by means of drugs. Captain Moffatt stated that he had found it of value to turn patients on their side now and then to allow for drainage of the mucus.

Case of Aortic Disease, probably of Syphilitic Origin. Demonstrated by Captain Logie.

In this case the *x*-ray showed enlargement of the heart to the right, and although no Wassermann was taken, he thought that it was almost certainly a specific case. The knee jerks were normal. Blood pressure was: systolic, 160; diastolic, 40. Major Gwyn remarked on the gradual recognition of the fact that a vast number of cases of aortic disease were of syphilitic origin.

Case in which the Heart had been markedly Irregular, with a Loud Murmur. Demonstrated by Captain Logie.

After a few days in the ward, heart had returned to normal with no treatment except rest. Major Gwyn commented on the number of cases we have had in our wards of men coming in with irregular hearts and murmurs of varying intensity, who, after a short rest, have had these signs entirely disappear, as in this case. The murmur was only heard while the man was on his feet. Captain Moffatt thought that it was probably of cardio-respiratory origin, as it was best heard in the third interspace and during respiration. He attributed it to the heart pressing on the lung.

Action of Atropine in a Case of Auricular Fibrillation. Demonstrated by Captain Moffat.

This case had been under digitalis treatment, and the heart rate had become markedly slowed, but the employment of atropine had produced a very definite quickening of the heart rate.

The meeting then adjourned.